STATE OF TENNESSEE

DEPARTMENT OF FINANCE AND ADMINISTRATION

REQUEST FOR PROPOSALS

FOR

PROJECT MANAGEMENT, DATA CONVERSION, AND TECHNICAL CONSULTING SERVICES

RFP NUMBER: 317.30-108

CONTENTS

1 INTRODUCTION

1.1 Statement of Purpose

1.1.1 Background

The State of Tennessee, Department of Finance and Administration, hereinafter referred to as the State, has issued this Request for Proposals (RFP) to define the State's minimum service requirements; solicit proposals; detail proposal requirements; and, outline the State's process for evaluating proposals and selecting the contractor.

Through this RFP, the State seeks to buy the best services at the most favorable, competitive prices and to give ALL qualified businesses, including those that are owned by minorities, women, persons with a disability, and small business enterprises, opportunity to do business with the State as contractors and sub-contractors.

The State intends to secure a contract for Project Management and Data Conversion Services for the creation of a digital statewide basemap suitable for use in Geographic Information Systems (GIS).

In January 2000, the State completed an RFP for Project Management and Data Conversion Services as requested in this RFP. This initial RFP resulted in a contract between the State of Tennessee, Department of Finance and Administration and Tennessee Geographic Information, Inc. (TGI). The initial term of this contract was for two years with three one-year options for renewal by the State. The State has exercised all renewal options pursuant to the initial contract with TGI. The total cumulative contract amount of this initial contract and all options is $19,000,000.

Currently, the contract with TGI will expire on February 13, 2005.

Through this initial contract and all renewal periods, the data products as described in this RFP and Attachments will have been produced for 41 of 95 counties. 5 additional counties were completed via a multi-year Pilot Program that was completed in 1998. There are 45 counties remaining that will be included in efforts resulting from this RFP.

The statewide digital basemap is built upon a foundation of digital ortho imagery and a comprehensive digital parcel database. Two scales of aerial photography, 1:30,000 (1"=2500') and 1:7,500 (1"=633') will be acquired. This data source allows development of the following GIS spatial data layers:

1) Digital orthophotography
2) Digital surface data
3) Parcel data
4) Limited planimetric data

While a seamless digital parcel layer for the entire State with appropriate links to assessment databases is the ultimate goal, the basic geographic production unit will be 1”=100’ and 1”=400’ maps sheets as identified on the Index Maps for each county. Data conversion will take place on a county-by-county basis. There will be no partial conversion for geographic areas smaller than a county.

The data products described herein shall be produced for almost all remaining counties in the State. There are several existing data sets throughout the state that have been developed by municipal, county and public utility agencies. Wherever appropriate, these existing data sets will be incorporated into the Production Phase. For each of these existing data sets, comprehensive analysis will be conducted to determine the feasibility of leveraging these data sets. Analysis will include a determination of the scope of effort required to convert to this specification as well as an assessment of the accuracy of these data sets. This will be a primary component of the Project Planning conducted for each county.

1.1.2 Services

The scope of this data conversion effort includes the following:

Data Products

- Creation of basic products as described in RFP Attachment 6.7 - Technical Specifications at the projected capacity levels indicated in Section 1.1.3 below. These shall consist of the acquisition of aerial photography and supporting control information for the production of digital ortho images, associated digital terrain models, planimetric data collection, and conversion of paper and mylar parcel maps to digital format.

- Conversion of existing data sets and data products to the format and specifications contained in the RFP Attachment 6.7 - Technical Specifications. These shall consist of the conversion of existing data sets that are:
    a) in form and content identical to those described in RFP Attachment 6.7 - Technical Specification, but are in a different proprietary data format,
    b) in the same proprietary format but created according to a different specification, or
    c) in the same proprietary data format with a similar specification, but requiring updating to current records.

- Creation of additional, value-added data products that may be required from time to time. These shall consist of a variety of data sets that are most efficiently and cost effectively produced concurrent with the production of the base set of products identified above and associated with the aerial photography, supporting control, and photogrammetric data component. Technical specifications for these products can be found in RFP Attachment 6.8 - Value-Added Technical Specifications.

Project Management Services

The State shall be the over-all Project Manager for the program. The State shall be responsible for determining the sequence of counties to be produced as well as coordinating with local government and other State agency personnel. Upon determination of the State's decision to produce data for a county, the State and the Contractor will jointly schedule each individual county. The Contractor Project Manager selected will require interaction and coordination with State, and various local government personnel.

The specific management services sought by the State shall be limited to the production of data and will include:

- Management services for the timely and efficient production of all data products. These shall include detailed scheduling, communication, reporting, and status tracking of the entire creation of the statewide digital basemap.
- Quality Assurance and Control for all aspects of the production efforts. The State is seeking a single entity to be responsible for all aspects of the production efforts associated with creating or converting all data products that are included in this RFP. This shall include aerial photography, supporting control information, photogrammetric tasks, conversion tasks, and compliance with the Technical Specifications (RFP Attachment 6.7 and 6.8). The State shall make the final determination as to the quality and acceptance of all data products and services provided by the Contractor.
- Coordination and scheduling of all production efforts.

Technical Consulting Services

- This shall involve assisting the State with determining the most cost effective and efficient technical and/or business processes for building and implementing a system to ensure the user community can access the data products being produced from this effort. The State will require the Proposer to become familiar with the State's existing computing and networking environment as well as the State GIS standard software products, and make recommendation(s) to the State for implementing a reliable system.

The vendor shall provide the services required by this RFP within the context of the technical environment described by the Tennessee Information Resources Architecture ("Technical Architecture"). The vendor may request a copy of the Technical Architecture by submitting a written request to the RFP coordinator listed in RFP Section 1.5.1. When a contract is executed pursuant to this RFP, the Technical Architecture will be included as a Contract Attachment.

The State's minimum qualifications for staff performing the Technical Consulting component are found in *Pro Forma* Contract Section A.2.b below (RFP Attachment 6.1).

1.1.3 Volume of Products and Services

Tables 1-4 represent the State's best available estimates of the annual production capacity that will be required for the Basic Data Products and Value Added Data Products. Specific details of each product and service are discussed in the RFP Attachment 6.7 – Technical Specifications and RFP Attachment 6.8 – Value-Added Technical Specifications.

Basic Data Products:

	Produce Orthos	Convert Orthos	Produce Parcels	Produce Parcels Remap	Convert Parcels	Fit, Complete Parcels	Update, Fit, Complete Parcels
Year 1:							
100' Map Sheets:	5,281	0					
400' Map Sheets:	4,225	0					
Parcels:			543,733	0	19,381	31,751	21,171
Year 2:							
100' Map Sheets:	1,035	4,268					
400' Map Sheets:	1,777	539					
Parcels:			340,243	12,660	256,729	0	0

Table 1

Model Reset:

Volume	Unit	*Year 1*	*Year 2*
1-50	Map Sheet	126	110
51-100	Map Sheet	68	59
> 100	Map Sheet	1,174	1,018

Table 2

Value Added Data Products:

	Year 1	*Year 2*
2' Topo. (vector) – 100' Scale:	126	110
10' Topo. (vector) – 400' Scale:	68	59
2' Topo. (DTM only) – 100' Scale:	1,174	1,018
10' Topo. (DTM only) – 400' Scale:	178	154
Building Footprints – 100' Scale:	647	561
Building Footprints – 400' Scale:	295	256
Railroad Centerlines – 100' Scale:	159	138
Railroad Centerlines – 400' Scale:	93	81
Building Points – 400' Scale:	146	127
Building Top Elevation – 100' Scale:	76	66
Building Top Elevation – 400' Scale:	5	5

Table 3

Technical Consulting

	Consultation for data storage, retrieval, and access
Year 1:	
Senior Technical Manager:	375 hours
Senior System Support:	750 hours
Year 2:	
Senior Technical Manager:	375 hours
Senior System Support:	750 hours

Table 4

1.1.4 Sample Indexes and Sample Data Set

RFP Attachment 6.9 and RFP Attachment 6.10 detail Sample Indexes and a sample data set respectively. Proposers may request a copy of the Sample Indexes and Sample Data by submitting a written request to the RFP coordinator listed in RFP Section 1.5.1.

1.2 Scope of Service, Contract Period, and Required Terms and Conditions

The RFP Attachment 6.1, *Pro Forma* Contract details the State's required:

- Scope of Services and Deliverables in Section A;
- Contract Period in Section B;
- Payment Terms in Section C;
- Standard Terms and Conditions in Section D; and,
- Special Terms and Conditions in Section E.

The *pro forma* contract substantially represents the contract document that the proposer selected by the State MUST agree to and sign.

1.3 Nondiscrimination

No person shall be excluded from participation in, be denied benefits of, be discriminated against in the admission or access to, or be discriminated against in treatment or employment in the State's contracted programs or activities on the grounds of disability, age, race, color, religion, sex, national origin, or any other classification protected by federal or Tennessee State Constitutional or statutory law; nor shall they be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination in the performance of contracts with the State or in the employment practices of the State's contractors. Accordingly, all vendors entering into contracts with the State shall, upon request, be required to show proof of such nondiscrimination and to post in conspicuous places, available to all employees and applicants, notices of nondiscrimination.

The State has designated the following to coordinate compliance with the nondiscrimination requirements of the State of Tennessee, Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, and applicable federal regulations.

Buddy Lea, Director
Division of Resource Development and Support
12th Floor, William R. Snodgrass TN Tower
312 8th Avenue North
Nashville, TN 37043
615-741-6049

1.4 Assistance to Proposers With a Disability

A Proposer with a disability may receive accommodation regarding the means of communicating this RFP and participating in this RFP process. A Proposer with a disability should contact the RFP Coordinator to request reasonable accommodation no later than the Disability Accommodation Request Deadline detailed in the RFP Section 2, Schedule of Events.

1.5 RFP Communications

1.5.1 All communications regarding this RFP should be in writing and must be directed to the following RFP Coordinator, the State of Tennessee's only point of contact for this RFP.

Travis Johnson, RFP Coordinator
18th Floor, William R. Snodgrass TN Tower
312 8th Avenue North
Nashville, TN 37243
Phone: 615-741-5727
Fax: 615-532-0471
Email: travis.johnson@state.tn.us

NOTICE: Unauthorized contact regarding this RFP with other employees or officials of the State of Tennessee may result in disqualification from this procurement.

1.5.2 The State has assigned the following RFP identification number that must be referenced in all communications regarding the RFP:

RFP-317.30-108

1.5.3 Any oral communications shall be considered unofficial and non-binding with regard to this RFP.

1.5.4 Each Proposer shall assume the risk of the method of dispatching any communication or proposal to the State. The State assumes no responsibility for delays or delivery failures resulting from the method of dispatch. Actual or electronic "postmarking" of a communication or proposal to the State by a deadline date shall not substitute for actual receipt of a communication or proposal by the State.

1.5.5 The RFP Coordinator must receive all written comments, including questions and requests for clarification, no later than the Written Comments Deadline detailed in the RFP Section 2, Schedule of Events.

1.5.6 The State reserves the right to determine, at its sole discretion, the appropriate and adequate responses to written comments, questions, and requests for clarification. The State's official responses and other official communications pursuant to this RFP shall constitute an amendment of this RFP.

1.5.7 The State will convey all official responses and communications pursuant to this RFP to the potential proposers from whom the State has received a Notice of Intent to Propose.

1.5.8 Only the State's official, written responses and communications shall be considered binding with regard to this RFP.

1.5.9 The State reserves the right to determine, at its sole discretion, the method of conveying official responses and communications pursuant to this RFP (*e.g.*, written, facsimile, electronic mail, or Internet posting). Most official notices will be posted on the following website:

http://state.tn.us/finance/oir/pcm/rfps.html

1.5.10 Any data or factual information provided by the State, in this RFP or an official response or communication, shall be deemed for informational purposes only, and if a Proposer relies on such data or factual information, the Proposer should either: (1) independently verify the information; or, (2) obtain the State's written consent to rely thereon.

1.6 Notice of Intent to Propose

Each potential proposer should submit a Notice of Intent to Propose to the RFP Coordinator by the deadline detailed in the RFP Section 2, Schedule of Events. The notice should include:

- Proposer's name
- name and title of a contact person
- address, telephone number, email address, and facsimile number of the contact person

NOTICE: A Notice of Intent to Propose creates no obligation and is not a prerequisite for making a proposal, however, it is necessary to ensure receipt of RFP amendments and other communications regarding the RFP (refer to RFP Sections 1.5, *et seq.*, above).

1.7 Proposal Deadline

Proposals must be submitted no later than the Proposal Deadline time and date detailed in the RFP Section 2, Schedule of Events. A proposal must respond to the written RFP and any RFP exhibits, attachments, or amendments. A late proposal shall not be accepted, and a Proposer's failure to submit a proposal before the deadline shall cause the proposal to be disqualified.

1.8 Pre-Proposal Conference

A Pre-Proposal Conference will be held at the time and date detailed in the RFP Section 2, Schedule of Events. The purpose of the conference is to discuss the RFP scope of services. While questions will be entertained, the response to any question at the Pre-Proposal Conference shall be considered tentative and non-binding with regard to this RFP. Questions concerning the RFP should be submitted in writing prior to the Written Comments Deadline date detailed in the RFP Section 2, Schedule of Events. To ensure accurate, consistent responses to all known potential Proposers, the official response to questions will be issued by the State as described in RFP Sections 1.5, *et seq.*, above and on the date detailed in the RFP Section 2, Schedule of Events.

Pre-Proposal Conference attendance is not mandatory, and each potential Proposer may be limited to a maximum number of attendees depending upon overall attendance and space limitations. The conference will be held at:

Mulltimedia Room
3rd Floor
William R. Snodgrass TN Tower
312 8th Avenue North
Nashville, TN 37243

1.9 Performance Bond

The State shall require a performance bond upon approval of a contract pursuant to this RFP. The amount of the performance bond will be a sum representing 15% of the State's maximum liability as stated in Paragraph C.1 of the contract resulting from this RFP. The successful Proposer shall obtain the required performance bond in form and substance acceptable to the State (refer to RFP Attachment 6.6) and provide it to the State no later than the Performance Bond Deadline date detailed in the RFP Section 2, Schedule of Events. Failure to provide the performance bond prior to the deadline as required shall result in contract termination.

In lieu of a performance bond, a surety deposit, in a sum representing 15% of the State's maximum liability as stated in Paragraph C.1 of the contract resulting from this RFP, may be substituted if approved by the State prior to its submittal. This surety deposit will be signed over to the control of the State for the duration of the Contract.

1.10 Joint Ventures and Partnering

Proposals from joint ventures are acceptable. However, such proposal should be designed to minimize any administrative burden on the State as a result of the participation of multiple entities. Proposals from joint ventures shall clearly set forth the respective responsibilities and functions each principal to the joint venture would perform if awarded the contract. If submitting a proposal as a joint venture, the Proposer must submit a copy of the joint venture agreement(s) that identifies the principals involved as well as their rights and responsibilities regarding performance and payment. The proposal transmittal letter must be signed by all principals and include all required information. If the joint venture is awarded the contract, the State shall require, at a minimum, the following:

1.10.1 Signatures

All principals to the joint venture must sign the contract with the State;

1.10.2 Single Point of Contact

The joint venture must designate a single point of contact who shall have the authority to represent all principals in the joint venture;

1.10.3 Performance Bond

The principals in the joint venture shall execute a single performance bond and if any of the principals defaults on the performance requirements, the State shall have the option of claiming up to the limit of the bond;

1.10.4 Liability

All principals to the joint venture shall be jointly and severally liable to the State for performance of the contract. Upon any default of a principal to the joint venture, the remaining principal(s) shall take all appropriate actions to ensure that services are uninterrupted and shall be responsible for complying with all contract requirements, at no additional cost to the State.

2 RFP SCHEDULE OF EVENTS

The following Schedule of Events represents the State's best estimate of the schedule that will be followed. Unless otherwise specified, the time of day for the following events will be between 8:00 a.m. and 4:30 p.m., Central Time.

RFP SCHEDULE OF EVENTS

NOTICE: The State reserves the right, at its sole discretion, to adjust this schedule as it deems necessary. The State will communicate any adjustment to the Schedule of Events to the potential proposers from whom the State has received a Notice of Intent to Propose.

EVENT	TIME	DATE (all dates are state business days)
1. State Issues RFP		**7/22/04**
2. Disability Accommodation Request Deadline		**7/29/04**
3. Pre-proposal Conference	**8:30 AM**	**8/3/04**
4. Notice of Intent to Propose Deadline		**8/9/04**
5. Written Comments Deadline		**8/13/04**
6. State Responds to Written Comments		**8/23/04**
7. Proposal Deadline	**2:00 p.m.**	**9/16/04**
8. State Completes Technical Proposal Evaluations		**9/27/04**
9. State Opens Cost Proposals and Calculates Scores	**9:00 a.m.**	**9/28/04**
10. State Issues Evaluation Notice and Opens RFP Files for Public Inspection	**9:00 a.m.**	**9/30/04**
11. Contract Signing		**10/12/04**
12. Contract Signature Deadline		**10/19/04**
13. Performance Bond Deadline		**10/21/04**
14. Contract Start Date		**11/1/04**

3 PROPOSAL REQUIREMENTS

Each Proposer must submit a proposal in response to this RFP with the most favorable terms that the Proposer can offer. There will be no best and final offer procedure.

3.1 Proposal Form and Delivery

3.1.1 Each response to this RFP must consist of a Technical Proposal and a Cost Proposal (as described below).

3.1.2 Each Proposer must submit one (1) original and seven (7) copies of the Technical Proposal to the State in a sealed package that is clearly marked:

"Technical Proposal in Response to RFP- 317.30-108 -- Do Not Open"

In addition, to the above required original and copies of the Technical Proposal, each Proposer must submit one (1) exact duplicate of the same in a single Portable Document Format (PDF) on diskette or compact disk. Excluded from this requirement are any oversized exhibits or oversized attachments that the Proposer may include in the Technical Proposal.

3.1.3 Each Proposer must submit one (1) Cost Proposal to the State in a separate, sealed package that is clearly marked:

"Cost Proposal in Response to RFP- 317.30-108 -- Do Not Open"

3.1.4 If a Proposer encloses the separately sealed proposals (as detailed above) in a larger package for mailing, the Proposer must clearly mark the outermost package:

"Contains Separately Sealed Technical and Cost Proposals for RFP- 317.30-108"

3.1.5 The State must receive all proposals in response to this RFP, at the following address, no later than the Proposal Deadline time and date detailed in the RFP Section 2, Schedule of Events.

Department of Finance and Administration
Office for Information Resources
18th Floor, William R. Snodgrass TN Tower
312 8th Avenue North
Nashville, TN 37243

3.1.6 A Proposer may not deliver a proposal orally or by any means of electronic transmission.

3.2 Technical Proposal

3.2.1 The RFP Attachment 6.3, Technical Proposal and Evaluation Guide details specific requirements for making a Technical Proposal in response to this RFP. This guide includes mandatory and general requirements as well as technical queries requiring a written response.

NOTICE: No pricing information shall be included in the Technical Proposal. Inclusion of Cost Proposal amounts in the Technical Proposal shall make the proposal non-responsive and the State shall reject it.

3.2.2 Each Proposer must use the Technical Proposal and Evaluation Guide to organize, reference, and draft the Technical Proposal. Each Proposer should duplicate the Technical Proposal and Evaluation Guide and use it as a table of contents covering the Technical Proposal (adding proposal page numbers as appropriate).

3.2.3 Each proposal should be economically prepared, with emphasis on completeness and clarity of content. A proposal, as well as any reference material presented, must be written in English and must be written on standard 8 1/2" x 11" paper (although foldouts containing charts, spreadsheets, and oversize exhibits are permissible). All proposal pages must be numbered.

3.2.4 All information included in a Technical Proposal should be relevant to a specific requirement detailed in the Technical Proposal and Evaluation Guide. All information must be incorporated into a response to a specific requirement and clearly referenced. Any information not meeting these criteria will be deemed extraneous and will in no way contribute to the evaluation process.

3.2.5 The State may determine a proposal to be non-responsive and reject it if the Proposer fails to organize and properly reference the Technical Proposal as required by this RFP and the Technical Proposal and Evaluation Guide.

3.2.6 The State may determine a proposal to be non-responsive and reject it if the Technical Proposal document fails to appropriately address/meet all of the requirements detailed in the Technical Proposal and Evaluation Guide.

3.3 Cost Proposal

3.3.1 The Cost Proposal must be submitted to the State in a sealed package separate from the Technical proposal.

3.3.2 Each Cost Proposal must be recorded on an exact duplicate of the RFP Attachment 6.4, Cost Proposal and Evaluation Guide.

3.3.3 Each Proposer shall ONLY record the proposed cost exactly as required by the Cost Proposal and Evaluation Guide and shall NOT record any other rates, amounts, or information.

3.3.4 The proposed cost shall incorporate all costs for services under the contract for the total contract period.

3.3.5 The Proposer must sign and date the Cost Proposal.

3.3.6 If a Proposer fails to submit a Cost Proposal as required, the State shall determine the proposal to be non-responsive and reject it.

4 GENERAL REQUIREMENTS & CONTRACTING INFORMATION

4.1 Proposer Required Review and Waiver of Objections

Each Proposer must carefully review this RFP and all attachments, including but not limited to the *pro forma* contract, for comments, questions, defects, objections, or any other matter requiring clarification or correction (collectively called "comments"). Comments concerning RFP objections must be made in writing and received by the State no later than the Written Comments Deadline detailed in the RFP Section 2, Schedule of Events. This will allow issuance of any necessary amendments and help prevent the opening of defective proposals upon which contract award could not be made.

Protests based on any objection shall be considered waived and invalid if these comments/objections have not been brought to the attention of the State, in writing, by the Written Comments Deadline.

4.2 RFP Amendment and Cancellation

The State reserves the unilateral right to amend this RFP in writing at any time. If an RFP amendment is issued, the State will convey such amendment to the potential proposers who submitted a Notice of Intent to Propose. Each proposal must respond to the final written RFP and any exhibits, attachments, and amendments.

The State of Tennessee reserves the right, at its sole discretion, to cancel and reissue this RFP or to cancel this RFP in its entirety in accordance with applicable laws and regulations.

4.3 Proposal Prohibitions and Right of Rejection

4.3.1 The State of Tennessee reserves the right, at its sole discretion, to reject any and all proposals in accordance with applicable laws and regulations.

4.3.2 Each proposal must comply with all of the terms of this RFP and all applicable State laws and regulations. The State may reject any proposal that does not comply with all of the terms, conditions, and performance requirements of this RFP. The State may consider any proposal that does not meet the requirements of this RFP to be non-responsive, and the State may reject such a proposal.

4.3.3 A proposal of alternate services (*i.e.*, a proposal that offers services different from those requested by this RFP) shall be considered non-responsive and rejected.

4.3.4 A Proposer may not restrict the rights of the State or otherwise qualify a proposal. The State may determine such a proposal to be a non-responsive counteroffer, and the proposal may be rejected.

4.3.5 A Proposer may not submit the Proposer's own contract terms and conditions in a response to this RFP. If a proposal contains such terms and conditions, the State may determine, at its sole discretion, the proposal to be a non-responsive counteroffer, and the proposal may be rejected.

4.3.6 A Proposer shall not submit more than one proposal. Submitting more than one proposal shall result in the disqualification of the Proposer.

4.3.7 A Proposer shall not submit multiple proposals in different forms. This prohibited action shall be defined as a Proposer submitting one proposal as a prime contractor and permitting a second Proposer to submit another proposal with the first Proposer offered as a subcontractor. This restriction does not prohibit different Proposers from offering the same subcontractor as a part of their proposals, provided that the subcontractor does not also submit a proposal as a prime contractor. Submitting multiple proposals in different forms may result in the disqualification of all Proposers knowingly involved.

4.3.8 The State shall reject a proposal if the Cost Proposal was not arrived at independently without collusion, consultation, communication, or agreement as to any matter relating to such prices with any other Proposer. Regardless of the time of detection, the State shall consider any of the foregoing prohibited actions to be grounds for proposal rejection or contract termination.

4.3.9 The State shall not contract with or consider a proposal from:

4.3.9.1 an individual who is, or within the past six months has been, an employee or official of the State of Tennessee;

4.3.9.2 a company, corporation, or any other contracting entity in which an ownership of two percent (2%) or more is held by an individual who is, or within the past six months has been, an employee or official of the State of Tennessee (this shall not apply either to financial interests that have been placed into a "blind trust" arrangement pursuant to which the employee does not have knowledge of the retention or disposition of such interests or to the ownership of publicly traded stocks or bonds where such ownership constitutes less than 2% of the total outstanding amount of the stocks or bonds of the issuing entity);

4.3.9.3 a company, corporation, or any other contracting entity which employs an individual who is, or within the past six months has been, an employee or official of the State of Tennessee in a position that would allow the direct or indirect use or disclosure of information, which was obtained through or in connection with his or her employment and not made available to the general public, for the purpose of furthering the private interest or personal profit of any person; or,

4.3.9.4 any individual, company, or other entity involved in assisting the State in the development, formulation, or drafting of this RFP or its scope of services shall be considered to have been given information that would afford an unfair advantage over other Proposers, and such individual, company, or other entity may not submit a proposal in response to this RFP.

4.3.9.5 For the purposes of applying the requirements of RFP subsection 4.3.9, *et. seq.*, an individual shall be deemed an employee or official of the State of Tennessee until such time as all compensation for salary, termination pay, and annual leave has been paid.

4.3.10 The State reserves the right, at its sole discretion, to waive a proposal's variances from full compliance with this RFP. If the State waives minor variances in a proposal, such waiver shall not modify the RFP requirements or excuse the Proposer from full compliance with such. Notwithstanding any minor variance, the State may hold any Proposer to strict compliance with this RFP.

4.4 Incorrect Proposal Information

If the State determines that a Proposer has provided, for consideration in this RFP process or subsequent contract negotiations, incorrect information that the Proposer knew or should have known was materially incorrect, that proposal shall be determined non-responsive and shall be rejected.

4.5 Proposal of Additional Services

If a proposal offers services in addition to those required by and described in this RFP, the additional services may be added to the contract before contract signing at the sole discretion of the State. Notwithstanding the foregoing, a Proposer shall not propose any additional cost amount(s) or rate(s) for additional services.

NOTICE: The Proposer's Cost Proposal shall record only the proposed cost as required in this RFP and shall not record any other rates, amounts, or information. If a Proposer fails to submit a Cost Proposal as required, the State shall determine the proposal to be non-responsive and shall reject the proposal.

4.6 Assignment and Subcontracting

4.6.1 The Proposer awarded a contract pursuant to this RFP may not subcontract, transfer, or assign any portion of the contract without the State's prior, written approval.

4.6.2 A subcontractor may only be substituted for a proposed subcontractor at the discretion of the State and with the State's prior, written approval.

4.6.3 At its sole discretion, the State reserves the right to refuse approval of any subcontract, transfer, or assignment.

4.6.4 Notwithstanding State approval of each subcontractor, the Proposer, if awarded a contract pursuant to this RFP, shall be the prime contractor and shall be responsible for all work performed.

4.7 Right to Refuse Personnel

At its sole discretion, the State reserves the right to refuse any personnel, of the prime contractor or a subcontractor, for use in the performance of a contract pursuant to this RFP.

4.8 Insurance

The State may require the apparent successful Proposer to provide proof of adequate worker's compensation and public liability insurance coverage before entering into a contract. Additionally, the State may require, at its sole discretion, the apparent successful Proposer to provide proof of adequate professional malpractice liability or other forms of insurance. Failure to provide evidence of such insurance coverage is a material breach and grounds for termination of the contract negotiations. Any insurance required by the State shall be in form and substance acceptable to the State.

4.9 Licensure

Before a contract pursuant to this RFP is signed, the apparent successful Proposer must hold all necessary, applicable business and professional licenses. The State may require any or all Proposers to submit evidence of proper licensure.

4.10 Service Location and Work Space

The service pursuant to this RFP is to be performed, completed, managed, and delivered as detailed in the RFP Attachment 6.1, *Pro Forma* Contract. Work space on the State's premises may be available for contractor use in accordance with the *pro forma* contract or at the State's discretion. Any work performed on the State's premises shall be completed during the State's standard business hours.

4.11 Proposal Withdrawal

A Proposer may withdraw a submitted proposal at any time up to the Proposal Deadline time and date detailed in the RFP Section 2, Schedule of Events. To do so, a proposer must submit a written request, signed by a Proposer's authorized representative to withdraw a proposal. After withdrawing a previously submitted proposal, a Proposer may submit another proposal at any time up to the Proposal Deadline.

4.12 Proposal Errors and Amendments

Each Proposer is liable for all proposal errors or omissions. A Proposer will not be allowed to alter or amend proposal documents after the Proposal Deadline time and date detailed in the RFP Section 2, Schedule of Events unless such is formally requested, in writing, by the State.

4.13 Proposal Preparation Costs

The State will not pay any costs associated with the preparation, submittal, or presentation of any proposal.

4.14 Disclosure of Proposal Contents

Each proposal and all materials submitted to the State in response to this RFP shall become the property of the State of Tennessee. Selection or rejection of a proposal does not affect this right. All proposal information, including detailed price and cost information, shall be held in confidence during the evaluation process. Notwithstanding, a list of actual proposers submitting timely proposals may be available to the public, upon request, directly after technical proposals are opened by the state.

Upon the completion of the evaluation of proposals, indicated by public release of an Evaluation Notice, the proposals and associated materials shall be open for review by the public in accordance with *Tennessee Code Annotated*, Section 10-7-504(a)(7). By submitting a proposal, the Proposer acknowledges and accepts that the full proposal contents and associated documents shall become open to public inspection.

4.15 Contractor Registration

All service contractors with state of Tennessee contracts must be registered through the Department of Finance and Administration's Service Provider Registry prior to contract approval. However, registration with the state is not required to make a proposal (any unregistered service provider must simply register as required prior to the final contract approval). Refer to the following Internet URL for more information about the Service Provider Registry and to register "on-line."

www.state.tn.us/finance/rds/ocr/sprs.html

4.16 Contract Approval

The RFP and the contractor selection processes do not obligate the State and do not create rights, interests, or claims of entitlement in either the Proposer with the apparent best-evaluated proposal or any other Proposer. Contract award and State obligations pursuant thereto shall commence only after the contract is signed by the Contractor and the head of the procuring state agency and after the contract is approved and signed by all other State officials as required by State laws and regulations.

4.17 Contract Payments

All contract payments shall be made in accordance with the contract's Payment Terms and Conditions provisions (refer to RFP Attachment 6.1, *Pro Forma* Contract, Section C). No payment shall be made until the contract is approved as required by State laws and regulations. Under no conditions shall the State be liable for payment of any type associated with the contract or responsible for any work done by the Contractor, even work done in good faith and even if the Contractor is orally directed to proceed with the delivery of services, if it occurs before contract approval by State officials as required by applicable statutes and rules of the State of Tennessee or before the contract start date or after the contract end date specified by the contract.

4.18 Contractor Performance

The Contractor shall be responsible for the completion of all work set out in the contract. All work is subject to inspection, evaluation, and acceptance by the State. The State may employ all reasonable means to ensure that the work is progressing and being performed in compliance with the contract. At reasonable times, the State may inspect those areas of the Contractor's place of business that are related to the performance of the contract. If the State requires such an inspection, the Contractor shall provide reasonable access and assistance.

4.19 Contract Amendment

During the course of this contract, the State may request the Contractor to perform additional work for which the Contractor would be compensated. That work shall be within the general scope of this RFP. In such instances, the State shall provide the Contractor a written description of the additional work, and the Contractor shall submit a time schedule for accomplishing the additional work and a price for the additional work based on the rates included in the Contractor's proposal to this RFP. If the State and the Contractor reach an agreement regarding the work and associated compensation, such agreement shall be effected by means of a contract amendment. Any such amendment requiring additional work must be mutually agreed upon by the parties and signed by the Contractor and the head of the procuring state agency and must be approved by other State officials as required by State laws and regulations. The Contractor shall not commence additional work until the State has issued a written contract amendment and secured all required approvals.

4.20 Severability

If any provision of this RFP is declared by a court to be illegal or in conflict with any law, said decision shall not affect the validity of the remaining RFP terms and provisions, and the rights and obligations of the State and Proposers shall be construed and enforced as if the RFP did not contain the particular provision held to be invalid.

5 PROPOSAL EVALUATION & CONTRACT AWARD

5.1 Evaluation Categories and Maximum Points

The State will consider qualifications and experience, technical approach, and cost in the evaluation of proposals. The maximum points that shall be awarded for each of these categories are detailed below.

CATEGORY	MAXIMUM POINTS POSSIBLE
Qualifications and Experience	**250**
Technical Approach	**450**
Cost Proposal	**300**

5.2 Evaluation Process

The proposal evaluation process is designed to award the contract not necessarily to the Proposer of least cost, but rather to the Proposer with the best combination of attributes based upon the evaluation criteria.

5.2.1 The RFP Coordinator will use the RFP Attachment 6.3, Technical Proposal and Evaluation Guide to manage the Technical Proposal Evaluation and maintain evaluation records.

5.2.1.1 The RFP Coordinator will review each Technical Proposal to determine compliance with mandatory requirements (refer to RFP Attachment 6.3, Technical Proposal and Evaluation Guide, Technical Proposal Section A). If the RFP Coordinator determines that a proposal may have failed to meet one or more of the mandatory requirements, the Proposal Evaluation Team will review the proposal and document its determination of whether: (1) the proposal meets requirements for further evaluation; (2) the State will request clarifications or corrections; or, (3) the State will determine the proposal non-responsive to the RFP and reject it.

5.2.1.2 A Proposal Evaluation Team, made up of three or more State employees, will evaluate each Technical Proposal that appears responsive to the RFP.

5.2.1.3 Each Proposal Evaluation Team member will independently, evaluate each proposal against the evaluation criteria in this RFP, rather than against other proposals, and will score each in accordance with the RFP Attachment 6.3, Technical Proposal and Evaluation Guide.

5.2.1.4 The State reserves the right, at its sole discretion, to request Proposer clarification of a Technical Proposal or to conduct clarification discussions with any or all Proposers. Any such clarification or discussion shall be limited to specific sections of the proposal identified by the State. The subject Proposer shall put any resulting clarification in writing as may be required by the State.

5.2.2 After Technical Proposal evaluations are completed, the RFP Coordinator will open the Cost Proposals and use the RFP Attachment 6.4, Cost Proposal and Evaluation Guide to calculate and document the Cost Proposal scores.

5.2.3 For each responsive proposal, the RFP Coordinator will add the average Technical Proposal score to the Cost Proposal score (refer to RFP Attachment 6.5, Proposal Score Summary Matrix).

5.3 Contract Award Process

5.3.1 The RFP Coordinator will forward the results of the proposal evaluation process to the head of the procuring agency who will consider the proposal evaluation process results and all pertinent information available to make a determination about the contract award. The State reserves the right to make an award without further discussion of any proposal.

Notwithstanding the foregoing, to effect a contract award to a proposer other than the one receiving the highest evaluation score, the head of the procuring agency must provide written justification for such an award and obtain the written approval of the Commissioner of Finance and Administration and the Comptroller of the Treasury.

5.3.2 After the agency head's determination, the State will issue an Evaluation Notice to identify the apparent best-evaluated proposal on the Evaluation Notice date detailed in the RFP Section 2, Schedule of Events.

NOTICE: The Evaluation Notice shall not create rights, interests, or claims of entitlement in either the Proposer with apparent best-evaluated proposal or any other Proposer.

5.3.3 The State will also make the RFP files available for public inspection on the Evaluation Notice date detailed in the RFP Section 2, Schedule of Events.

5.3.4 The Proposer with the apparent best-evaluated proposal must agree to and sign a contract with the State which shall be substantially the same as the RFP Attachment 6.1, *Pro Forma* Contract.

However, the State reserves the right, at its sole discretion, to add terms and conditions or to revise *pro forma* contract requirements in the State's best interests subsequent to this RFP process. No such terms and conditions or revision of contract requirements shall materially affect the basis of proposal evaluations or negatively impact the competitive nature of the RFP process.

5.3.5 The Proposer with the apparent best-evaluated proposal must sign and return the contract drawn by the State pursuant to this RFP no later than the Contract Signature Deadline date detailed in the RFP Section 2, Schedule of Events. If the Proposer fails to provide the signed contract by the deadline, the State may determine that the Proposer is non-responsive to the terms of this RFP and reject the proposal.

5.3.6 If the State determines that the apparent best-evaluated proposal is non-responsive and rejects the proposal after opening Cost Proposals, the RFP Coordinator will re-calculate scores for each responsive Cost Proposal to determine the new, apparent best-evaluated proposal.

ATTACHMENT 6.1

PRO FORMA CONTRACT

The *pro forma* contract detailed in this attachment contains some "blanks" (signified by descriptions in capital letters) that will be completed with appropriate information in the final contract resulting from this RFP.

CONTRACT
BETWEEN THE STATE OF TENNESSEE,
[STATE AGENCY NAME]
AND
[CONTRACTOR NAME]

This Contract, by and between the State of Tennessee, [STATE AGENCY NAME], hereinafter referred to as the "State" and [CONTRACTOR LEGAL ENTITY NAME], hereinafter referred to as the "Contractor," is for the provision of Project Management, Data Conversion and Technical Consulting services, as further defined in the "SCOPE OF SERVICES."

The Contractor is [AN INDIVIDUAL / A FOR-PROFIT CORPORATION / A NONPROFIT CORPORATION / A SPECIAL PURPOSE CORPORATION OR ASSOCIATION / A FRATERNAL OR PATRIOTIC ORGANIZATION / A PARTNERSHIP / A JOINT VENTURE / A LIMITED LIABILITY COMPANY]. The Contractor's address is:

[ADDRESS]

The Contractor's place of incorporation or organization is [STATE OF ORGANIZATION].

A. SCOPE OF SERVICES:

A.1. The Contractor agrees to perform the services as defined in the Request for Proposals for Project Management, Data Conversion, and Technical Consulting Services (RFP), including all documents referenced in Subsection E.10, below.

The State shall provide to the Contractor orders for data products and services as defined in the Request for Proposals for Project Management, Data Conversion and Technical Consulting Services (RFP), Attachment 6.4, Cost Proposal Format.

The State shall make the final determination as to the quality of all data products and services provided by the Contractor prior to acceptance.

A.2.a The Contractor agrees to perform Technical Consulting for assisting the State with determining the most cost effective and efficient technical and/or business processes for building and implementing a system to ensure the user community can access the data products being produced from this effort. The State will require the Contractor to become familiar with the State's existing computing and networking environment as well as the State GIS standard software products, and make recommendation(s) to the State for implementing a reliable system.

A.2.b The States minimum qualifications for the staff performing the Technical Consulting component shall be:

Senior Technical Manager: A Bachelor or Master degree in geography, GIS, computer science or related field and 5-10 years experience directly related to the appropriate service sought by the State. This service level shall require excellent oral and written skills, the ability to handle creative problem solving, and the ability to perform research on a variety of technical problems.

Senior Systems Support: A Bachelor or Master degree in geography, GIS, computer science or related field and 5-10 years of experience directly related to the appropriate service sought by the State. This service level shall require excellent system administration and application development skills with a strong background in the Environmental Systems Research Institute (ESRI), Inc. software line, the State standard software.

B. CONTRACT TERM:

B.1. Contract Term. This Contract shall be effective for the period commencing on November 1, 2004 and ending on October 31, 2006. The State shall have no obligation for services rendered by the Contractor which are not performed within the specified period.

B.2. Term Extension. The State reserves the right to extend this Contract for an additional period or periods of time representing increments of no more than one year and a total contract term of no more than four (4) years, provided that the State notifies the Contractor in writing of its intention to do so at least ninety (90) days prior to the contract expiration date. An extension of the term of this Contract will be effected through an amendment to the Contract. If the extension of the Contract necessitates additional funding beyond that which was included in the original Contract, the increase in the State's maximum liability will also be effected through an amendment to the Contract and shall be based upon rates provided for in the original contract.

C. PAYMENT TERMS AND CONDITIONS:

C.1. Maximum Liability. In no event shall the maximum liability of the State under this Contract exceed [WRITTEN DOLLAR AMOUNT] ($[NUMBER AMOUNT]). The Service Rates in Section C.3 shall constitute the entire compensation due the Contractor for the Service and all of the Contractor's obligations hereunder regardless of the difficulty, materials or equipment required. The Service Rates include, but are not limited to, all applicable taxes, fees, overheads, and all other direct and indirect costs incurred or to be incurred by the Contractor.

The Contractor is not entitled to be paid the maximum liability for any period under the Contract or any extensions of the Contract for work not requested by the State. The maximum liability represents available funds for payment to the Contractor and does not guarantee payment of any such funds to the Contractor under this Contract unless the State requests work and the Contractor performs said work. In which case, the Contractor shall be paid in accordance with the Service Rates detailed in Section C.3. The State is under no obligation to request work from the Contractor in any specific dollar amounts or to request any work at all from the Contractor during any period of this Contract.

C.2. Compensation Firm. The Service Rates and the Maximum Liability of the State under this Contract are firm for the duration of the Contract and are not subject to escalation for any reason unless amended.

C.3. Payment Methodology. The Contractor shall be compensated based on the Service Rates herein for units of service authorized by the State in a total amount not to exceed the Contract Maximum Liability established in Section C.1. The Contractor's compensation shall be contingent upon the satisfactory completion of units of service or project milestones defined in Section A. The Contractor shall be compensated based upon the following Service Rates shown below.

When the State is ready to begin production of data products for a county, the State will multiply the total number of each data type for the county by the appropriate Unit Costs, and then sum the products of these calculations to determine the State's total cost for the county. The State will use the rates from Attachment 1, Cost Schedule of Products and Services, and the total number of parcels and total map sheets for each data product the State requires for a given geographic unit (county, municipality, service area) to calculate a Total Fee for each order. The State and the Contractor shall then develop milestone rates, delivery dates, and payment schedule according to the table below. The total amount for the Aerial Photography, Photocontrol and GPS Survey Milestone shall not exceed 13% of the Total Fee calculated above. The total number of "Incremental Data Product Deliveries" shall be determined based upon number of data products delivered per month and production capacity, and shall not exceed twelve (12) deliveries for any given order.

Prior to commencing work for the county, the State will provide the contractor with a written task order including the cost and milestone detail. The contractor will be required to be sign the Task Order and return to the State signifying the contractor's concurrence with the fee and milestones.

SERVICE UNIT/MILESTONE	AMOUNT
Aerial Photography, Photocontrol and GPS Survey	$[NUMBER]
Incremental Data Product Delivery(1)	$[NUMBER]
Incremental Data Product Delivery(2)	$[NUMBER]
Incremental Data Product Delivery(n)	$[NUMBER]

The State and the Contractor shall agree to a Scope of Service for each Technical Consulting Service sought by the State. Using the hourly rates from Attachment 1, Cost Schedule of Products and Services, a total fee shall be developed for the Technical Consulting Service sought by the State. The State and the Contractor shall then develop milestone rates, delivery dates, and payment schedule according to the table below. The maximum duration of any Technical Consulting Service sought by the State shall be 12 months. The Contractor's compensation shall be contingent upon the satisfactory completion of project milestones defined for each Technical Consulting Service sought by the State. The Contractor shall be compensated based upon the following milestone payment schedule below:

Prior to commencing work for each Technical Consulting Service, the State will provide the contractor with a written task order including the cost and milestone detail. The contractor will be required to be sign the Task Order and return to the State signifying the contractor's concurrence with the fee and milestones.

SERVICE MILESTONE	AMOUNT
MILESTONE EVENT 1	$[NUMBER AMOUNT]
MILESTONE EVENT 2	$[NUMBER AMOUNT]
MILESTONE EVENT n	$[NUMBER AMOUNT]

The Contractor shall submit monthly invoices, in form and substance acceptable to the State with all of the necessary supporting documentation, prior to any payment. Such invoices shall be submitted for completed units of service or project milestones for the amount stipulated.

C.4. Travel Compensation. The Contractor shall not be compensated or reimbursed for travel, meals, or lodging.

C.5. Payment of Invoice. The payment of the invoice by the State shall not prejudice the State's right to object to or question any invoice or matter in relation thereto. Such payment by the State shall neither be construed as acceptance of any part of the work or service provided nor as an approval of any of the amounts invoiced therein.

C.6. Invoice Reductions. The Contractor's invoice shall be subject to reduction for amounts included in any invoice or payment theretofore made which are determined by the State, on the basis of audits conducted in accordance with the terms of this contract, not to constitute proper remuneration for compensable services.

C.7. Deductions. The State reserves the right to deduct from amounts which are or shall become due and payable to the Contractor under this or any contract between the Contractor and the State of Tennessee any amounts which are or shall become due and payable to the State of Tennessee by the Contractor.

C.8. Automatic Deposits. The Contractor shall complete and sign an "Authorization Agreement for Automatic Deposit (ACH Credits) Form." This form shall be provided to the Contractor by the State. Once this form has been completed and submitted to the State by the Contractor all payments to the Contractor, under this or any other contract the Contractor has with the State of Tennessee shall be made by Automated Clearing House (ACH). The Contractor shall not invoice the State for services until the Contractor has completed this form and submitted it to the State.

D. STANDARD TERMS AND CONDITIONS:

D.1. Required Approvals. The State is not bound by this Contract until it is approved by the appropriate State officials in accordance with applicable Tennessee State laws and regulations.

D.2. Modification and Amendment. This Contract may be modified only by a written amendment executed by all parties hereto and approved by the appropriate Tennessee State officials in accordance with applicable Tennessee State laws and regulations.

D.3. Termination for Convenience. The State may terminate this Contract without cause for any reason. Said termination shall not be deemed a Breach of Contract by the State. The State shall give the Contractor at least ninety (90) days written notice before the effective termination date. The Contractor shall be entitled to receive compensation for satisfactory, authorized service completed as of the termination date, but in no event shall the State be liable to the Contractor for compensation for any service which has not been rendered. Upon such termination, the Contractor shall have no right to any actual general, special, incidental, consequential, or any other damages whatsoever of any description or amount.

D.4. Termination for Cause. If the Contractor fails to properly perform its obligations under this Contract in a timely or proper manner, or if the Contractor violates any terms of this Contract, the State shall have the right to immediately terminate the Contract and withhold payments in excess of fair compensation for completed services. Notwithstanding the above, the Contractor shall not be relieved of liability to the State for damages sustained by virtue of any breach of this Contract by the Contractor.

D.5. Subcontracting. The Contractor shall not assign this Contract or enter into a subcontract for any of the services performed under this Contract without obtaining the prior written approval of the State. If such subcontracts are approved by the State, they shall contain, at a minimum, sections of this Contract pertaining to "Conflicts of Interest" and "Nondiscrimination" (sections D.6. and D.7.). Notwithstanding any use of approved subcontractors, the Contractor shall be the prime contractor and shall be responsible for all work performed.

D.6. Conflicts of Interest. The Contractor warrants that no part of the total Contract Amount shall be paid directly or indirectly to an employee or official of the State of Tennessee as wages, compensation, or gifts in exchange for acting as an officer, agent, employee, subcontractor, or consultant to the Contractor in connection with any work contemplated or performed relative to this Contract.

D.7. Nondiscrimination. The Contractor hereby agrees, warrants, and assures that no person shall be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination in the performance of this Contract or in the employment practices of the Contractor on the grounds of disability, age, race, color, religion, sex, national origin, or any other classification protected by Federal, Tennessee State constitutional, or statutory law. The Contractor shall, upon request, show proof of such nondiscrimination and shall post in conspicuous places, available to all employees and applicants, notices of nondiscrimination.

D.8. Records. The Contractor shall maintain documentation for all charges against the State under this Contract. The books, records, and documents of the Contractor, insofar as they relate to work performed or money received under this contract, shall be maintained for a period of three (3) full years from the date of the final payment and shall be subject to audit at any reasonable time and upon reasonable notice by the State, the Comptroller of the Treasury, or their duly appointed representatives. The financial statements shall be prepared in accordance with generally accepted accounting principles.

D.9. Monitoring. The Contractor's activities conducted and records maintained pursuant to this Contract shall be subject to monitoring and evaluation by the State, the Comptroller of the Treasury, or their duly appointed representatives.

D.10. Progress Reports. The Contractor shall submit brief, periodic, progress reports to the State as requested.

D.11. Strict Performance. Failure by any party to this Contract to insist in any one or more cases upon the strict performance of any of the terms, covenants, conditions, or provisions of this Contract shall not be construed as a waiver or relinquishment of any such term, covenant, condition, or provision. No term or condition of this Contract shall be held to be waived, modified, or deleted except by a written amendment signed by the parties hereto.

D.12. Independent Contractor. The parties hereto, in the performance of this Contract, shall not act as employees, partners, joint venturers, or associates of one another. It is expressly acknowledged by the parties hereto that such parties are independent contracting entities and that nothing in this Contract shall be construed to create an employer/employee relationship or to allow either to exercise control or direction over the manner or method by which the other transacts its business affairs or provides its usual services. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purpose whatsoever.

The Contractor, being an independent contractor and not an employee of the State, agrees to carry adequate public liability and other appropriate forms of insurance, including adequate public liability and other appropriate forms of insurance on the Contractor's employees, and to pay all applicable taxes incident to this Contract.

D.13. State Liability. The State shall have no liability except as specifically provided in this Contract.

D.14. Force Majeure. The obligations of the parties to this contract are subject to prevention by causes beyond the parties' control that could not be avoided by the exercise of due care including, but not limited to, acts of God, riots, wars, strikes, epidemics or any other similar cause.

D.15. State and Federal Compliance. The Contractor shall comply with all applicable State and Federal laws and regulations in the performance of this Contract.

D.16. Governing Law. This Contract shall be governed by and construed in accordance with the laws of the State of Tennessee. The Contractor agrees that it will be subject to the exclusive jurisdiction of the courts of the State of Tennessee in actions that may arise under this Contract. The Contractor acknowledges and agrees that any rights or claims against the State of Tennessee or its employees hereunder, and any remedies arising therefrom, shall be subject to and limited to those rights and remedies, if any, available under ***Tennessee Code Annotated***, Sections 9-8-101 through 9-8-407.

D.17. Completeness. This Contract is complete and contains the entire understanding between the parties relating to the subject matter contained herein, including all the terms and conditions of the parties' agreement. This Contract supersedes any and all prior understandings, representations, negotiations, and agreements between the parties relating hereto, whether written or oral.

D.18. Severability. If any terms and conditions of this Contract are held to be invalid or unenforceable as a matter of law, the other terms and conditions hereof shall not be affected thereby and shall remain in full force and effect. To this end, the terms and conditions of this Contract are declared severable.

D.19. Headings. Section headings of this Contract are for reference purposes only and shall not be construed as part of this Contract.

E. SPECIAL TERMS AND CONDITIONS:

E.1. Conflicting Terms and Conditions. Should any of these special terms and conditions conflict with any other terms and conditions of this Contract, these special terms and conditions shall control.

E.2. Communications and Contacts. All instructions, notices, consents, demands, or other communications required or contemplated by this Contract shall be in writing and shall be made by facsimile transmission, by overnight courier service, or by first class mail, postage prepaid, addressed to the respective party at the appropriate facsimile number or address as set forth below or to such other party, facsimile number, or address as may be hereafter specified by written notice.

The State:
[NAME], Director
Tennessee Department of Finance and Administration
Office for Information Resources, GIS Services
16th Floor, William R. Snodgrass TN Tower
312 8th Avenue North
Nashville, TN 37763
(615) 741-9356
(615) 532-0471
[EMAIL ADDRESS]

The Contractor:
[NAME AND TITLE OF CONTRACTOR CONTACT PERSON]
[CONTRACTOR NAME]
[ADDRESS]
[TELEPHONE NUMBER]
[FACSIMILE NUMBER]
[EMAIL ADDRESS]

All instructions, notices, consents, demands, or other communications shall be considered effectively given as of the day of delivery; as of the date specified for overnight courier service delivery; as of three (3)business days after the date of mailing; or on the day the facsimile transmission is received mechanically by the telefax machine at the receiving location and receipt is verbally confirmed by the sender if prior to 4:30 p.m. CST. Any communication by facsimile transmission shall also be sent by United States mail on the same date of the facsimile transmission.

E.3. Subject to Funds Availability. The Contract is subject to the appropriation and availability of State and/or Federal funds. In the event that the funds are not appropriated or are otherwise unavailable, the State reserves the right to terminate the Contract upon written notice to the Contractor. Said termination shall not be deemed a breach of Contract by the State. Upon receipt of the written notice, the Contractor shall cease all work associated with the Contract. Should such an event occur, the Contractor shall be entitled to compensation for all satisfactory and authorized services completed as of the termination date. Upon such termination, the Contractor shall have no right to recover from the State any actual, general, special, incidental, consequential, or any other damages whatsoever of any description or amount.

E.4. Breach. A party shall be deemed to have breached the Contract if any of the following occurs:

— failure to perform in accordance with any term or provision of the Contract;
— partial performance of any term or provision of the Contract;
— any act prohibited or restricted by the Contract; or
— violation of any warranty.

For purposes of this contract, these items shall hereinafter be referred to as a “Breach.”

a. Contractor Breach— The State shall notify Contractor in writing of a Breach.

(1) In event of a Breach by Contractor, the state shall have available the remedy of Actual Damages and any other remedy available at law or equity.

(2) Liquidated Damages— In the event of a Breach, the State may assess Liquidated Damages. The State shall notify the Contractor of amounts to be assessed as Liquidated Damages. The parties agree that due to the complicated nature of the Contractor's obligations under this Contract it would be difficult to specifically designate a monetary amount for a Breach by Contractor as said amounts are likely to be uncertain and not easily proven. Contractor hereby represents and covenants it has carefully reviewed the Liquidated Damages contained in above referenced, Attachment 2 and agree that said amounts represent a reasonable relationship between the amount and what might reasonably be expected in the event of Breach, and are a reasonable estimate of the damages that would occur from a Breach. It is hereby agreed between the parties that the Liquidated Damages represent solely the damages and injuries sustained by the State in losing the benefit of the bargain with Contractor and do not include any injury or damage sustained by a third party. The Contractor agrees that the liquidated damage amount is in addition to any amounts Contractor may owe the State pursuant to the indemnity provision or other section of this Contract.

The State may continue to withhold the Liquidated Damages or a portion thereof until the Contractor cures the Breach, the State exercises its option to declare a Partial Default, or the State terminates the Contract. The State is not obligated to assess Liquidated Damages before availing itself of any other remedy. The State may choose to discontinue Liquidated Damages and avail itself of any other remedy available under this Contract or at law or equity; provided, however, Contractor shall receive a credit for said Liquidated Damages previously withheld except in the event of a Partial Default.

(3) Partial Default— In the event of a Breach, the State may declare a Partial Default. In which case, the State shall provide the Contractor written notice of: (1) the date which Contractor shall terminate providing the service associated with the Breach; and (2) the date the State will begin to provide the service associated with the Breach. Notwithstanding the foregoing, the State may revise the time periods contained in the notice written to the Contractor.

In the event the State declares a Partial Default, the State may withhold, together with any other damages associated with the Breach, from the amounts due the Contractor the greater of: (1) amounts which would be paid the Contractor to provide the defaulted service; or (2) the cost to the State of providing the defaulted service, whether said service is provided by the State or a third party. To determine the amount the Contractor is being paid for any particular service, the Department shall be entitled to receive within five (5) days any requested material from Contractor. The State shall make the final and binding determination of said amount.

The State may assess Liquidated Damages against the Contractor for any failure to perform which ultimately results in a Partial Default with said Liquidated Damages to cease when said Partial Default is effective. Upon Partial Default, the Contractor shall have no right to recover from the State any actual, general, special, incidental, consequential, or any other damages whatsoever of any description or amount. Contractor agrees to cooperate fully with the State in the event a Partial Default is taken

(4) Contract Termination— In the event of a Breach, the State may terminate the Contract immediately or in stages. The Contractor shall be notified of the termination in writing by the State. Said notice shall hereinafter be referred to as Termination Notice. The Termination Notice may specify either that the termination is to be effective immediately, on a date certain in the future, or that the Contractor shall cease operations under this Contract in stages. In the event of a termination, the State may withhold any amounts which may be due Contractor without waiver of any other remedy or damages available to the State at law or at equity. The Contractor shall be liable to the State for any and all damages incurred by the State and any and all expenses incurred by the State which exceed the amount the State would have paid Contractor under this Contract. Contractor agrees to cooperate with the State in the event of a Contract Termination or Partial Takeover.

b. State Breach— In the event of a Breach of contract by the State, the Contractor shall notify the State in writing within 30 days of any Breach of contract by the State. Said notice shall contain a description of the Breach. Failure by the Contractor to provide said written notice shall operate as an absolute waiver by the Contractor of the State's Breach. In no event shall any Breach on the part of the State excuse the Contractor from full performance under this Contract. In the event of Breach by the State, the Contractor may avail itself of any remedy at law in the forum with appropriate jurisdiction; provided, however, failure by the Contractor to give the State written notice and opportunity to cure as described herein operates as a waiver of the State's Breach. Failure by the Contractor to file a claim before the appropriate forum in Tennessee with jurisdiction to hear such claim within one (1) year of the written notice of Breach shall operate as a waiver of said claim in its entirety. It is agreed by the parties this provision establishes a contractual period of limitations for any claim brought by the Contractor.

E.5. Partial Takeover. The State may, at its convenience and without cause, exercise a partial takeover of any service which the Contractor is obligated to perform under this Contract, including but not limited to any service which is the subject of a subcontract between Contractor and a third party, although the Contractor is not in Breach (hereinafter referred to as "Partial Takeover"). Said Partial Takeover shall not be deemed a Breach of Contract by the State. Contractor shall be given at least 30 days prior written notice of said Partial Takeover with said notice to specify the area(s) of service the State will assume and the date of said assumption. Any Partial Takeover by the State shall not alter in any way Contractor's other obligations under this Contract. The State may withhold from amounts due the Contractor the amount the Contractor would have been paid to deliver the service as determined by the State. The amounts shall be withheld effective as of the date the State assumes the service. Upon Partial Takeover, the Contractor shall have no right to recover from the State any actual, general, special, incidental, consequential, or any other damages whatsoever of any description or amount.

E.6. State Ownership of Work Products. The State shall have all ownership right, title, and interest, including ownership of copyright, in all work products created, designed, developed, derived, documented, installed, or delivered to the State under this Contract. The State shall have royalty-free and unlimited rights to use, disclose, reproduce, or publish, for any purpose whatsoever, all said work products. The Contractor shall furnish such information and data upon request of the State, in accordance with the Contract and applicable State law.

E.7. Performance Bond . Upon approval of the Contract by all appropriate State officials in accordance with applicable State laws and regulations, the Contractor shall furnish a performance bond in the amount of 15% of the State's maximum liability as stated in Paragraph C.1 equal to [WRITTEN DOLLAR AMOUNT] ($[NUMBER AMOUNT]), guaranteeing full and faithful performance of all undertakings and obligations under this Contract for the initial Contract term and all extensions thereof. The bond shall be in the manner and form prescribed by the State and must be issued through a company licensed to issue such a bond in the State of Tennessee.

The Contractor shall obtain the required performance bond in form and substance acceptable to the State and provide it to the State no later than October 21, 2004. Failure to provide the performance bond prior to the deadline as required shall result in contract termination.

In lieu of a performance bond, a surety deposit, in the amount of 15% of the State's maximum liability as stated in Paragraph C.1 equal to [WRITTEN DOLLAR AMOUNT] ($[NUMBER AMOUNT]), may be substituted if approved by the State prior to its submittal. This surety deposit will be signed over to the control of the State for the duration of the Contract.

E.8. Printing Authorization. The Contractor agrees that no publication coming within the jurisdiction of ***Tennessee Code Annotated***, Section 12-7-101, *et. seq*., shall be printed unless a printing authorization number has been obtained and affixed as required by ***Tennessee Code Annotated***, Section 12-7-103 (d).

E.9. State Furnished Property. The Contractor shall be responsible for the correct use, maintenance, and protection of all articles of nonexpendable, tangible, personal property furnished by the State for the Contractor's temporary use under this Contract. Upon termination of this Contract, all property furnished shall be returned to the State in good order and condition as when received, reasonable use and wear thereof excepted. Should the property be destroyed, lost, or stolen, the Contractor shall be responsible to the State for the residual value of the property at the time of loss.

E.10. Incorporation of Additional Documents. Included in this Contract by reference are the following documents:

a. The Contract document and its attachments
b. All Clarifications and addenda made to the Contractor's Proposal
c. The Request for Proposal and its associated amendments
d. Technical Specifications provided to the Contractor
e. The Contractor's Proposal

In the event of a discrepancy or ambiguity regarding the Contractor's duties, responsibilities, and performance under this Contract, these documents shall govern in order of precedence detailed above.

E.11. Workpapers Subject to Review. The Contractor shall make all audit, accounting, or financial analysis workpapers, notes, and other documentation available for review by the Comptroller of the Treasury or his representatives, upon request, during normal working hours either while the analysis is in progress or subsequent to the completion of this Contract.

E.12. Lobbying. The Contractor certifies, to the best of its knowledge and belief, that:

No federally appropriated funds have been paid or will be paid, by or on behalf of the Contractor, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, and entering into any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

If any funds other than federally appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this contract, grant, loan, or cooperative agreement, the Contractor shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

The Contractor shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including sub-grants, subcontracts, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients of federally appropriated funds shall certify and disclose accordingly.

E.13. Public Funding Notice. All notices, informational pamphlets, press releases, research reports, signs, and similar public notices prepared and released by the Contractor relative to this Contract shall include the statement, "This project is funded under an agreement with the State of Tennessee." Any such notices by the Contractor shall be approved by the State.

E.14. Prohibited Advertising. The Contractor shall not refer to this Contract or the Contractor's relationship with the State hereunder in commercial advertising in such a manner as to state or imply that the Contractor or the Contractor's services are endorsed.

E.15. Confidentiality of Records. Strict standards of confidentiality of records shall be maintained in accordance with the law. All material and information, regardless of form, medium or method of communication, provided to the Contractor by the State or acquired by the Contractor on behalf of the State shall be regarded as confidential information in accordance with the provisions of State law and ethical standards and shall not be disclosed, and all necessary steps shall be taken by the Contractor to safeguard the confidentiality of such material or information in conformance with State law and ethical standards.

The Contractor will be deemed to have satisfied its obligations under this section by exercising the same level of care to preserve the confidentiality of the State's information as the Contractor exercises to protect its own confidential information so long as such standard of care does not violate the applicable provisions of the first paragraph of this section.

The Contractor's obligations under this section do not apply to information in the public domain; entering the public domain but not from a breach by the Contractor of this Contract; previously possessed by the Contractor without written obligations to the State to protect it; acquired by the Contractor without written restrictions against disclosure from a third party which, to the Contractor's knowledge, is free to disclose the information; independently developed by the Contractor without the use of the State's information; or, disclosed by the State to others without restrictions against disclosure.

It is expressly understood and agreed the obligations set forth in this section shall survive the termination of this Contract.

E.16. Copyrights and Patents. The Contractor agrees to indemnify and hold harmless the State of Tennessee as well as its officers, agents, and employees from and against any and all claims or suits which may be brought against the State for infringement of any laws regarding patents or copyrights which may arise from the Contractor's performance of this Contract. In any such action brought against the State, the Contractor shall satisfy and indemnify the State for the amount of any final judgment for infringement. The Contractor further agrees it shall be liable for the reasonable fees of attorneys for the State in the event such service is necessitated to enforce the terms of this Contract or otherwise enforce the obligations of the Contractor to the State. The State shall give the Contractor written notice of any such claim or suit and full right and opportunity to conduct the Contractor's own defense thereof.

E.17. Environmental Tobacco Smoke. Pursuant to the provisions of the federal "Pro-Children Act of 1994" and the Tennessee "Children's Act for Clean Indoor Air of 1995," the Contractor shall prohibit smoking of tobacco products within any indoor premises in which services are provided pursuant to this Contract to individuals under the age of eighteen (18) years. The Contractor shall post "no smoking" signs in appropriate, permanent sites within such premises. This prohibition shall be applicable during all hours, not just the hours in which children are present. Violators of the prohibition may be subject to civil penalties and fines. This prohibition shall apply to and be made part of any subcontract related to this Contract.

E.18. Date/Time Hold Harmless. As required by ***Tennessee Code Annotated***, Section 12-4-118, the contractor shall hold harmless and indemnify the State of Tennessee; its officers and employees; and any agency or political subdivision of the State for any breach of contract caused directly or indirectly by the failure of computer software or any device containing a computer processor to accurately or properly recognize, calculate, display, sort or otherwise process dates or times.

E.19. Hold Harmless. The Contractor agrees to indemnify and hold harmless the State of Tennessee as well as its officers, agents, and employees from and against any and all claims, liabilities, losses, and causes of action which may arise, accrue, or result to any person, firm, corporation, or other entity which may be injured or damaged as a result of acts, omissions, or negligence on the part of the Contractor, its employees, or any person acting for or on its or their behalf relating to this Contract. The Contractor further agrees it shall be liable for the reasonable cost of attorneys for the State in the event such service is necessitated to enforce the terms of this Contract or otherwise enforce the obligations of the Contractor to the State.

In the event of any such suit or claim, the Contractor shall give the State immediate notice thereof and shall provide all assistance required by the State in the State's defense. The State shall give the Contractor written notice of any such claim or suit, and the Contractor shall have full right and obligation to conduct the Contractor's own defense thereof. Nothing contained herein shall be deemed to accord to the Contractor, through its attorney(s), the right to represent the State of Tennessee in any legal matter, such rights being governed by ***Tennessee Code Annotated***, Section 8-6-106.

E.20. Tennessee Consolidated Retirement System. The Contractor acknowledges and understands that, subject to statutory exceptions contained in ***Tennessee Code Annotated***, Section 8-36-801, *et. seq*., the law governing the Tennessee Consolidated Retirement System, provides that if a retired member returns to State employment, the member's retirement allowance is suspended during the period of the employment. Accordingly and notwithstanding any provision of this Contract to the contrary, the Contractor agrees that if it is later determined that the true nature of the working relationship between the Contractor and the State under this Contract is that of "employee/employer" and not that of an independent contractor, the Contractor may be required to repay to the Tennessee Consolidated Retirement System the amount of retirement benefits the Contractor received from the Retirement System during the period of this Contract.

E.21. Price Decreases. The Contractor must agree to provide the State with at least the best available prices/costs for its then current quantities and volume of service for the duration of the contract. If the Contractor or other members of the Contractor's Team (subcontractors) provides a lower cost for any service to any other customer, the State's prices/costs must be lowered to a matching or lower rate.

The Contractor will provide by the twentieth (20) month of the contract, written detail identifying and comparing the State's prices/costs to other pricing that the Contractor or other members of the Contractor's Team (subcontractors) offers to other similar customers for any and all services. The Contractor will provide the same information by the ninth (9) month of any applicable contract renewal periods.

The Contractor's failure to offer lower rates than other contracts with lower or equal revenue volumes will be considered a violation of the terms of the contract. The Contractor will issue credits to the State retroactively from the published or effective date of the reduced rates and appropriately adjust the rates for the remainder of the term of the contract.

The Contractor must agree to come into conformity with general price/cost decreases resulting from law, regulatory decisions, or industry competitive forces.

E.22. Cost Schedule of Products and Services Supplement(s). During the course of this contract, the State may request the Contractor to update the Cost Schedule of Products and Services with additional product(s) or service(s). The additional data product(s) or service(s) shall be within the scope of the contract. The State shall provide the Contractor with a written description of the additional product(s) or service(s), and the Contractor shall submit a price for the additional item(s). If the State and Contractor reach an agreement regarding the product(s) or service(s) and the fee associated with the addition, the agreement shall become effective by means of a contract amendment. Any such amendment requiring additional product(s) or service(s) must be mutually agreed upon by the parties and signed by the Contractor and the head of the procuring state agency and must be approved by other State officials as required by State laws and regulations. The Contractor shall not commence additional work until the State has issued a written contract amendment and secured all required approvals.

E.23. Contract Expiration—No Compensation for Incomplete Work. In the event that the contract reaches the end of the Contract Term (Contract Section B.1) or the end of any Term Extension invoked by the State (Contract Section B.2) and the State chooses not to extend the Contract further, and if the Contractor is in the midst of performing a State-authorized service, the Contractor shall be entitled to receive compensation for satisfactory, authorized service completed as of the expiration date. However, in no event shall the State be liable to the Contractor for compensation for any service that has not been rendered. Upon such contract expiration, the Contractor shall have no right to any actual general, special, incidental, consequential, or any other damages whatsoever of any description or amount.

IN WITNESS WHEREOF:

[CONTRACTOR LEGAL ENTITY NAME]:

[NAME AND TITLE] **Date**

DEPARTMENT OF FINANCE AND ADMINISTRATION:

M. D. Goetz, Jr., Commissioner **Date**

APPROVED:

DEPARTMENT OF FINANCE AND ADMINISTRATION:

M. D. Goetz, Jr., Commissioner **Date**

DEPARTMENT OF PERSONNEL:

Randy C. Camp, Commissioner **Date**

COMPTROLLER OF THE TREASURY:

John G. Morgan, Comptroller of the Treasury **Date**

Attachment 1

Cost Schedule of Products and Services

Basic Products

Digital Ortho Imagery:

Description	Unit	Unit Cost
Produce Ortho Imagery:	100' Map Sheet	$[NUMBER]
	400' Map Sheet	$[NUMBER]
Convert Ortho Imagery:	100' Map Sheet	$[NUMBER]
	400' Map Sheet	$[NUMBER]

Model Reset:

Volume	Unit	Unit Cost
1-50	Map Sheet	$[NUMBER]
51-100	Map Sheet	$[NUMBER]
> 100	Map Sheet	$[NUMBER]

Explanation:

PRODUCED digital ortho imagery is characterized as the acquisition of new aerial photography, photo control, stereo compilation, rectification, and hardcopy plot consistent with the RFP, Attachment 6.7 - Technical Specifications.

CONVERTED ortho imagery is characterized as the reformatting, mosiacing, recutting and creation of a hardcopy plot of an existing set of digital ortho imagery to a sheet layout and indexing system that complies with the RFP, Attachment 6.7 - Technical Specifications. The State will acquire the existing data set and provide to the contractor in a mutually agreed to format.

MODEL RESET – periodically while an individual county is in production, there exists a need to amend the Task Order issued to the contractor in order to add additional Ortho Imagery products and/or value-added products. The model reset fee is provided to account for additional work required by the vendor to fulfill these amended Task Orders.

Basic Products (Continued)

Parcel Data Conversion:

Description	Unit	Unit Cost
Produce Parcels:	Parcel	$[NUMBER]
Produce Parcels/Remap:	Parcel	$[NUMBER]
Convert Parcels:	Parcel	$[NUMBER]
Convert, Fit, Complete Parcels:	Parcel	$[NUMBER]
Convert, Update, Fit, Complete Parcels:	Parcel	$[NUMBER]

Explanation:

Produce Parcels: This item involves conversion of existing manually produced parcel maps to digital format as identified in RFP, Attachment 6.7 – Technical Specifications.

Produce Parcels/Remap: This item is very similar to Produce Parcels described above, but an additional data processing step shall be required. There are counties that shall be converted that have a manual mapping system that has deviated significantly from the State's standard layout and index schema discussed in the RFP, Attachment 6.7 – Technical Specifications. This will include compiling, appending, and recutting these maps sheets AFTER conversion to the Technical Specification; and assign new Parcel Identification Numbers (PIN) to the remapped parcel dataset.

Convert Parcels: This item includes the conversion of an existing, current Parcel data set that is in form and content similar to the State's specification, but in a different proprietary format such as Intergraph MGE. This effort shall consist of no initial data capture, only required conversion and reformatting to match the RFP, Attachment 6.7 – Technical Specifications.

Convert, Fit, Complete Parcels: This item is characterized by the conversion of an existing parcel data set that may or may not be in the State standard format, but is incomplete or partially complete, and was converted without the aid of Digital Ortho Imagery. The Contractor will be required to convert as necessary, fit to occupation, and complete data collection from State provided source documents. In all cases identified by the State to date, the additional data collection shall involve exclusively the capture of text and annotation that is required in the RFP, Attachment 6.7 – Technical Specification.

Convert, Update, Fit, Complete Parcels: This item is identical to the previous entry, but the existing parcel data set has been sporadically maintained and will require an update to current source documents during the production cycle.

Value-Added Products:

Description	Unit	Unit Cost
2’ Topographic (vector):	100’ Map Sheet	$[NUMBER]
10’ Topographic (vector):	400’ Map Sheet	$[NUMBER]
2’ Topographic (DTM only):	100’ Map Sheet	$[NUMBER]
10’ Topographic (DTM only):	400’ Map Sheet	$[NUMBER]
Building Footprints	100’ Map Sheet	$[NUMBER]
Building Footprints	400’ Map Sheet	$[NUMBER]
Railroad Centerlines	100’ Map Sheet	$[NUMBER]
Railroad Centerlines	400’ Map Sheet	$[NUMBER]
Building Points	400’ Map Sheet	$[NUMBER]
Building Top Elevation	100’ Map Sheet	$[NUMBER]
Building Top Elevation	400’ Map Sheet	$[NUMBER]

Explanation:

RFP, Attachment 6.8 – Value Added Specifications provides detailed descriptions of each of these data products.

Technical Consulting Service:

Service Level:	**Cost Per Hour**
Senior Technical Manager	$[NUMBER]
Senior System Support	$[NUMBER]

Explanation:

The State and the Contractor shall agree to a Scope of Service for each Technical Consulting Service sought by the State. Using the hourly rates above, Cost Schedule of Products and Services, a total fee shall developed for the Technical Consulting Service sought by the State. Appropriate milestones and due dates shall be mutually agreed to by the State and the Contractor prior to commencing work on a Technical Consulting Service order.

The States minimum qualifications for the staff performing the Technical Consulting component are:

Senior Technical Manager: A Bachelor or Master degree in geography, GIS, computer science or related field and 5-10 years experience directly related to the appropriate service sought by the State. This service level shall require excellent oral and written skills, the ability to handle creative problem solving, and the ability to perform research on a variety of technical problems.

Senior Systems Support: A Bachelor or Master degree in geography, GIS, computer science or related field and 5-10 years of experience directly related to the appropriate service sought by the State. This service level shall require excellent system administration and application development skills with a strong background in the Environmental Systems Research Institute (ESRI), Inc. software line, the State standard software.

Attachment 2

Liquidated Damages

Data Products:

Liquidated damages shall be based upon a percentage of the total fee calculated for each milestone(s) associated with each geographic unit (county, municipality, service area, etc.) ordered from the Cost Schedule of Products and Services as detailed in Paragraph C.3. Specific percentages of each milestone are identified below: Liquidated damages shall be the amount that represents the sum of all remaining milestones for each geographic unit.

SERVICE UNIT/MILESTONE	AMOUNT	PERCENTAGE
Aerial Photography, Photocontrol and GPS Survey	$[NUMBER]	75%
Incremental Data Product Delivery(1)	$[NUMBER]	5%
Incremental Data Product Delivery(2)	$[NUMBER]	12.5%
Incremental Data Product Delivery(n)	$[NUMBER]	Percent of Milestone (n-1) plus 7.5% to a Maximum of 50%*

* In the event that a order, and the total number of Incremental Data Product Deliveries exceeds seven increments, each subsequent Incremental Data Product Delivery milestone shall be calculated at 50% of the respective Milestone amount.

Technical Consulting Services:

Liquidated damages shall be based upon a percentage of the total fee calculated for each Statement of Work ordered from the Cost Schedule of Products and Services as detailed in Paragraph C.3. A flat rate percentage of 20% of the total fee shall be used as the basis for calculating the liquidated damages.

ATTACHMENT 6.2

PROPOSAL TRANSMITTAL AND STATEMENT OF CERTIFICATIONS AND ASSURANCES

The Proposer must complete and sign this Technical Proposal Transmittal. It must be signed, in the space below, by an individual empowered to bind the proposing entity to the provisions of this RFP and any contract awarded pursuant to it. If said individual is not the Proposer's chief executive, this document shall attach evidence showing the individual's authority to bind the proposing entity.

PROPOSER LEGAL ENTITY NAME: _____

PROPOSER FEDERAL EMPLOYER IDENTIFICATION NUMBER:
(or Social Security Number) _____

The Proposer does hereby affirm and expressly declare confirmation, certification, and assurance of the following:

1) This proposal constitutes a commitment to provide all services as defined in the RFP Attachment 6.1, *Pro Forma* Contract Scope of Services for the total contract period and confirmation that the Proposer shall comply with all of the provisions in this RFP and shall accept all terms and conditions set out in the RFP Attachment 6.1, *Pro Forma* Contract.
2) The information detailed in the proposal submitted herewith in response to the subject RFP is accurate.
3) The proposal submitted herewith in response to the subject RFP shall remain valid for at least 120 days subsequent to the date of the Cost Proposal opening and thereafter in accordance with any contract pursuant to the RFP.
4) The Proposers shall comply with:
   a) the laws of the State of Tennessee;
   b) Title VI of the federal Civil Rights Act of 1964;
   c) Title IX of the federal Education Amendments Act of 1972;
   d) the Equal Employment Opportunity Act and the regulations issued there under by the federal government;
   e) the Americans with Disabilities Act of 1990 and the regulations issued there under by the federal government;
   f) the condition that the submitted proposal was independently arrived at, without collusion, under penalty of perjury; and,
   g) the condition that no amount shall be paid directly or indirectly to an employee or official of the State of Tennessee as wages, compensation, or gifts in exchange for acting as an officer, agent, employee, subcontractor, or consultant to the Proposer in connection with the Procurement under this RFP.
5) The Proposer shall comply with all of the provisions in the subject RFP and shall accept all terms and conditions set out in the RFP Attachment 6.1, *Pro Forma* Contract.
6) The Proposer shall provide a performance bond in accordance with the requirements of the RFP.
7) If the Proposer is a Joint Venture or partnership, the Proposer must comply with all requirements expressed in RFP Section 1.10, attaching required documentation to this Proposal Transmittal.

SIGNATURE & DATE: _____

ATTACHMENT 6.3

TECHNICAL PROPOSAL & EVALUATION GUIDE — SECTION A	
PROPOSER NAME:	

SECTION A — MANDATORY REQUIREMENTS

The Proposer must address ALL Mandatory Requirements section items and provide, in sequence, the information and documentation as required (referenced with the associated item references). The RFP Coordinator will review all general mandatory requirements, including but not limited to the following:

- **Proposal received on or before the Proposal Deadline.**
- **Technical Proposal copies and Cost Proposal packaged separately.**
- **Technical Proposal contains NO cost data.**
- **Proposer did NOT submit alternate proposals.**
- **Proposer did NOT submit multiple proposals in a different form.**
- **Technical Proposal does NOT contain any restrictions of the rights of the State or other qualification of the proposal.**

The RFP Coordinator will also review the proposal to determine if the Mandatory Requirement Items (below) are met and mark each with pass or fail. For each requirement that is not met, the Proposal Evaluation Team must review the proposal and attach a written determination.

NOTICE: In addition to these requirements, the State will also evaluate compliance with ALL RFP requirements.

Proposal Page # (to be completed by Proposer)	Mandatory Requirement Items	State Use ONLY Pass/Fail
	A.1 Provide the Proposal Transmittal and Statement of Certifications and Assurances (detailed in RFP Attachment 6.2) completed and signed, in the space provided, by an individual empowered to bind the Proposer to the provisions of this RFP and any resulting contract. ***Each Proposer <u>must</u> sign the Proposal Transmittal and Statement of Certifications and Assurances without exception or qualification.***	
	A.2 Provide the following as documentation of financial responsibility and stability. ▪ a current written bank reference, in the form of a standard business letter, indicating that the proposer's business relationship with the financial institution is in positive standing ▪ two current written, positive credit references, in the form of standard business letters, from vendors with which the proposer has done business or, documentation of a positive credit rating determined by a accredited credit bureau within the last 6 months ▪ a copy of a valid certificate of insurance indicating liability insurance in the amount of at least One Million dollars ($1,000,000)	

Proposal Page # (to be completed by Proposer)	Mandatory Requirement Items	State Use ONLY Pass/Fail
	A.3 Provide a statement of whether the Proposer or any individual who shall perform work under the contract has a possible conflict of interest (*e.g.,* employment by the State of Tennessee) and, if so, the nature of that conflict. ***Any questions of conflict of interest shall be solely within the discretion of the State, and the State reserves the right to cancel any award.***	

TECHNICAL PROPOSAL & EVALUATION GUIDE — SECTION B	
PROPOSER NAME:	

SECTION B — QUALIFICATIONS & EXPERIENCE

The Proposer must address ALL Qualifications and Experience section items and provide, in sequence, the information and documentation as required (referenced with the associated item references).

A Proposal Evaluation Team, made up of three or more State employees, will independently evaluate and score the proposal's "qualifications and experience" responses.

Proposal Page # (to be completed by Proposer)	Qualifications & Experience Items	
	B.1	Describe the Proposer's form of business (*i.e*., individual, sole proprietor, corporation, non-profit corporation, partnership, limited liability company) and detail the name, mailing address, email address, and telephone number of the person the State should contact regarding the proposal.
	B.2	Provide a statement of whether there have been any mergers, acquisitions, or sales of the Proposer company within the last ten years, and if so, an explanation providing relevant details.
	B.3	Provide a statement of whether the Proposer or any of the Proposer's employees, agents, independent contractors, or subcontractors have been convicted of, pled guilty to, or pled *nolo contendere* to any felony, and if so, an explanation providing relevant details.
	B.4	Provide a statement of whether there is any pending litigation against the Proposer; and if such litigation exists, an attached opinion of counsel as to whether the pending litigation will impair the Proposer's performance in a contract under this RFP.
	B.5	Provide a statement of whether, in the last ten years, the Proposer has filed (or had filed against it) any bankruptcy or insolvency proceeding, whether voluntary or involuntary, or undergone the appointment of a receiver, trustee, or assignee for the benefit of creditors, and if so, an explanation providing relevant details.
	B.6	Provide a statement of whether there are any pending Securities Exchange Commission investigations involving the Proposer, and if such are pending or in progress, an explanation providing relevant details and an attached opinion of counsel as to whether the pending investigation(s) will impair the Proposer's performance in a contract under this RFP.
	B.7	Provide a brief, descriptive statement indicating the Proposer's credentials to deliver the services sought under this RFP.
	B.8	Briefly describe how long the Proposer has been performing the services required by this RFP and include the number of years in business.
	B.9	Describe the Proposer organization's number of employees, client base, and location of offices.

Proposal Page # (to be completed by Proposer)	Qualifications & Experience Items
	B.10 Provide a statement of whether the Proposer intends to use subcontractors, and if so, the names and mailing addresses of the committed subcontractors and a description of the scope and portions of the work the subcontractors will perform.
	B.11 Provide a narrative description of the proposed project team, its members, and organizational structure including subcontractors if the Proposer intends to use subcontractors.
	B.12 Provide a personnel roster and resumes of key people who shall be assigned by the Proposer to perform duties or services under the contract (include estimated number of hours to be worked on the contract for each person, and the resumes shall detail each individual's title, education, current position with the Proposer, and employment history) as well as an organizational chart highlighting the key people who shall be assigned to accomplish the work required by this RFP and illustrating the lines of authority and designate the individual responsible for the completion of each service component and deliverable of the RFP including subcontractors if the Proposer intends to use subcontractors. The States minimum qualifications for the staff performing the Technical Consulting component shall be: Senior Technical Manager: A Bachelor or Master degree in geography, GIS, computer science or related field and 5-10 years experience directly related to the appropriate service sought by the State. This service level shall require excellent oral and written skills, the ability to handle creative problem solving, and the ability to perform research on a variety of technical problems. Senior Systems Support: A Bachelor or Master degree in geography, GIS, computer science or related field and 5-10 years of experience directly related to the appropriate service sought by the State. This service level shall require excellent system administration and application development skills with a strong background in the ESRI, Inc. software line, the State standard software.
	B.13 Provide documentation of Proposer commitment to diversity as represented by its business strategy, business relationships, and workforce — this documentation should detail: ▪ a description of the Proposer's existing programs and procedures designed to encourage and foster commerce with business enterprises owned by minorities, women, persons with a disability and small business enterprises ▪ a listing of the Proposer's current contracts with business enterprises owned by minorities, women, persons with a disability and small business enterprises, including the following information o contract description and total value o contractor name and ownership characteristics (*i.e.*, ethnicity, sex, disability) o contractor contact and telephone number ▪ an estimate of the level of participation by business enterprises owned by minorities, women, persons with a disability and small business enterprises in a contract awarded to the Proposer pursuant to this RFP, including the following information: o participation estimate (expressed as a percent of the total contract value that will be dedicated to business with subcontractors and supply contractors having such ownership characteristics)

Proposal Page # (to be completed by Proposer)	Qualifications & Experience Items
	○ descriptions of anticipated contracts ○ names and ownership characteristics (*i.e.*, ethnicity, sex, disability) of anticipated subcontractors and supply contractors anticipated ▪ the percent of the Proposer's total current employees by ethnicity, sex, and disability ***Proposers that demonstrate a commitment to diversity will advance State efforts to expand opportunity to do business with the State as contractors and sub-contractors. Proposal evaluations will recognize the positive qualifications and experience of a Proposer that does business with enterprises owned by minorities, women, persons with a disability and small business enterprises and that offers a diverse workforce to meet service needs.***
	B.14 Provide customer references for similar projects representing both three of the larger accounts currently serviced by the vendor and three completed projects as well as a list, if any, of all current contracts with the State of Tennessee and all those completed within the previous five year period. Each reference must include: ▪ the company name and business address; ▪ the name, title, telephone number and email address of the company contact knowledgeable about the project work; and ▪ a brief description of the service provided and the period of service. The list of contracts with the State of Tennessee must include: ▪ the contract number; ▪ the contract term; and ▪ the procuring state agency for each reference. The State will send a reference check questionnaire to these references, and their input on the questionnaire will be considered by the State evaluation team. The reference is fully responsible for the timing and content of the reference check information returned to the State. The State bears no responsibility for late or improperly filled out reference check questionnaires. ***Each evaluator will generally consider the results of reference inquiries by the State regarding <u>all</u> references provided (both state and non-state). Current or prior contracts with the State are not a prerequisite and are not required for the maximum evaluation score possible, and the existence of such contracts with the State will not automatically result in the addition or deduction of evaluation points.***
(Maximum Section B Score = 250)	
SCORE *(for <u>all</u> Section B items above, B.1 through B.14)*:	

TECHNICAL PROPOSAL & EVALUATION GUIDE — SECTION C

PROPOSER NAME:	

SECTION C — TECHNICAL APPROACH

The Proposer must address ALL Technical Approach section items and provide, in sequence, the information and documentation as required (referenced with the associated item references). A Proposal Evaluation Team, made up of three or more State employees, will independently evaluate and score the proposal's response to each item. Each evaluator will use the following whole number, raw point scale for scoring each item:

0 = no value 1 = poor 2 = fair 3 = satisfactory 4 = good 5 = excellent

The RFP Coordinator will multiply each item score by the assigned weight with the product being the item's raw weighted score for purposes of calculating the section score as detailed at the end of this table.

Proposal Page # (to be completed by Proposer)	Technical Approach Items		State Use ONLY		
			Score	Item Weight	Raw Weighted Score
	C.1	Provide a narrative that illustrates the Proposer's understanding of the State's requirements and project schedule.		**2**	
The narrative should clearly indicate the Proposer's understanding of the State's goals in producing a comprehensive statewide digital parcel and ortho imagery base map composed of the data products detailed in the RFP Attachment 6.7 - Technical Specifications. A clear understanding of the State's desire to achieve this digital basemap via Federal, State, local and private partnership must be evidenced along with a clear understanding of the role and contribution of the Proposer towards making this goal a reality. The "Project Understanding" should clearly tie together the Project Management and Data Production components into a concise commentary that indicates the Proposer's comprehension of the State's over-all goals for the project.					
	C.2	Provide a narrative that illustrates how the Proposer will complete the scope of services, accomplish required objectives, and meet the State's project schedule. Using **RFP Attachment 6.7 – Technical Specifications**, each of the following components must be addressed and the narrative should reference the appropriate subsection.			
	C.2.1	Aerial photography		**1**	
	C.2.2	Photocontrol and ground survey		**2**	
	C.2.3	Photogrammetric data capture		**2**	
	C.2.4	Orthophotography		**2**	
	C.2.5	Parcel data conversion		**2**	
Included in each section must be an inventory of Proposer/Proposer Team's capacity to produce the full range of data products included in this RFP. Particular emphasis should be placed on the Proposer/Proposer Team's resources that will be dedicated to this effort. The inventory should include required equipment such as aircraft, camera(s), surveying equipment, hardware, software, and human resources and any other resources that the Proposer intends to use in completing this effort. Due to the nature of this effort, especially the variability of factors such as climatic conditions for flying and potential mechanical failures, excess capacity should be documented.					
	C.3	New and emerging technology		**3**	
Proposers must provide a narrative that clearly and concisely indicates 1) the proposer/proposer team approach to adaptation of relevant emerging and new technologies; 2) a clear indication of new technologies, if any, that the Proposer believes may impact the State's goals and objectives.					

Proposal Page # (to be completed by Proposer)	Technical Approach Items	State Use ONLY		
		Score	Item Weight	Raw Weighted Score
	C.4 Provide a narrative that illustrates how the Proposer will manage the project, ensure completion of the scope of services, and accomplish required objectives within the State's project schedule.		**4**	
The narrative should include project organization, a breakdown of the major phases that accounts for delivery of all data products, any assumptions or constraints identified by the proposer, critical paths identifying parallel activities and dependencies, requirements for State input into the process, generalized timetable for the major phases, and Proposer resource loading by phase. Clear and concise lines of authority must be indicated and by what authority, and in what manner, will conflicts and adverse impacts be resolved.				
	C.5 Provide a comprehensive narrative, captioned "Project Quality Assurance," that illustrates how the Proposer will ensure the delivery of data products that are consistent with the RFP Attachment 6.7 - Technical Specifications detailing measures that will be taken at specific points in the production cycle.		**4**	
This narrative must be directly related to the Project Approach identified in **C.2** above. A clear explanation of the steps that are to be taken to ensure that data being produced by multiple subcontractors, and data being produced simultaneously for a geographic area but different stages of the production cycle, will be provided in a consistent manner. Any dependencies upon State input into the Quality Assurance process must be indicated. A clear indication of how corrective actions will be identified and implemented shall be included.				
			Total Raw Weighted Score: *(sum of Raw Weighted Scores above)*	
Total Raw Weighted Score / **maximum possible raw weighted score** *(i.e., 5 x the sum of item weights above)*			**X 450** *(maximum section score)*	**= SCORE:**

ATTACHMENT 6.4

COST PROPOSAL & SCORING GUIDE	
NOTICE TO PROPOSER: This Cost Proposal MUST be completed EXACTLY as required.	
PROPOSER NAME:	
SIGNATURE & DATE:	
NOTE: The signatory must be an individual or a company officer empowered to contractually bind the Proposer. If the Signatory is not the Proposer company president, the Statement of Certifications and Assurances (RFP Attachment 6.2) SHALL attach evidence showing the Signatory's authority to bind the Proposer.	

COST PROPOSAL SCHEDULE

The proposed cost, detailed on the following pages, shall indicate the proposed price for providing the entire scope of service including all services as defined in the RFP Attachment 6.1, *Pro Forma* Contract Scope of Services for the total contract period. The proposed cost and the submitted technical proposal associated with this cost shall remain valid for at least 120 days subsequent to the date of the Cost Proposal opening and thereafter in accordance with any resulting contract between the Proposer and the State. All monetary amounts are United States currency.

COST PROPOSAL & SCORING GUIDE – PART A				
Basic Products:			**State Use Only**	
Cost Item Description	**Unit**	**Proposed Unit Cost**	**Est. Units**	**Total Est. Cost**
Produce Ortho Imagery:	100' Map Sheet		6,316	
PRODUCED digital ortho imagery is characterized as the acquisition of new aerial photography, photo control, stereo compilation, rectification, and hardcopy plot consistent with the RFP Attachment 6.7 - Technical Specifications.				
Produce Ortho Imagery:	400' Map Sheet		6,002	
PRODUCED digital ortho imagery is characterized as the acquisition of new aerial photography, photo control, stereo compilation, rectification, and hardcopy plot consistent with the RFP Attachment 6.7 - Technical Specifications.				
Convert Ortho Imagery:	100' Map Sheet		4,268	
CONVERTED ortho imagery is characterized as the reformatting, mosiacing, recutting and creation of a hardcopy plot of an existing set of digital ortho imagery to a sheet layout and indexing system that complies with the RFP Attachment 6.7 - Technical Specifications. The State will acquire the existing data set and provide to the contractor in a mutually agreed to format.				
Convert Ortho Imagery:	400' Map Sheet		539	
CONVERTED ortho imagery is characterized as the reformatting, mosiacing, recutting and creation of a hardcopy plot of an existing set of digital ortho imagery to a sheet layout and indexing system that complies with the RFP Attachment 6.7 - Technical Specifications. The State will acquire the existing data set and provide to the contractor in a mutually agreed to format.				
Part A Evaluation Cost Amount: *(sum of all total est. cost amounts above)*				

COST PROPOSAL & SCORING GUIDE – PART B					
Model Reset:				**State Use Only**	
Cost Item Description	**Volume**	**Unit**	**Proposed Cost**	**Est. Units**	**Total Est. Cost**
Model Reset	1-50	Map Sheet		**41**	
Model Reset	51-100	Map Sheet		**183**	
Model Reset	> 100	Map Sheet		**561**	
Part B Evaluation Cost Amount: *(sum of all total est. cost amounts above)*					

Explanation: MODEL RESET – periodically during the course of production of data products for a county, there exists a need to amend the Task Order issued to the contractor in order to add additional Ortho Imagery products and/or value-added products. The model reset fee is provided to account for additional work required by the vendor to fulfill these amended Task Orders. The model reset fee shall only be applicable if the amended task order is issued after work has been completed on Ortho Imagery products and/or value-added products associated with the initial Task Order has been completed by the contractor.

COST PROPOSAL & SCORING GUIDE – PART C

Basic Products:			**State Use Only**	
Cost Item Description	**Unit**	**Proposed Unit Cost**	**Est. Units**	**Total Est. Cost**
Produce Parcels:	Parcel		915,708	
Produce Parcels: This item involves conversion of existing manually produced parcel maps to digital format as identified in RFP Attachment 6.7 – Technical Specifications.				
Produce Parcels/Remap:	Parcel		12,660	
Produce Parcels/Remap: This item is very similar to **Produce Parcels** described above, but an additional data processing step shall be required. There are several counties that shall be converted that have a manual mapping system that has deviated from the State's standard layout and index schema discussed in RFP Attachment 6.7 – Technical Specifications. This will include compiling, appending, and recutting these maps sheets AFTER conversion to the Technical Specification; and assign new Parcel Identification Numbers (PIN) to the remapped parcel dataset.				
Convert Parcels:	Parcel		276,110	
Convert Parcels: This item includes the conversion of an existing, current Parcel data set that is in form and content similar to the State's specification, but in a different proprietary format such as Intergraph MGE. This effort shall consist of no initial data capture, only required conversion and reformatting to match the RFP Attachment 6.7 - Technical Specifications.				
Convert, Fit, Complete Parcels:	Parcel		12,057	
Convert, Fit, Complete Parcels: This item is characterized by the conversion of an existing parcel data set that may or may not be in the State standard format, but is incomplete or partially complete, and was converted without the aid of Digital Ortho Imagery. The Proposer will be required to convert as necessary, fit to occupation, and complete data collection from State provided source documents. In all cases identified by the State to date, the additional data collection shall involve exclusively the capture of text and annotation that is required in the Technical Specification.				
Convert, Update, Fit, Complete Parcels:	Parcel		21,171	
Convert, Update, Fit, Complete Parcels: This item is identical to the previously described entry, but the existing parcel data set has been sporadically maintained and will require an update to current source documents during the production cycle.				
Part C Evaluation Cost Amount: *(sum of all total est. cost amounts above)*				

COST PROPOSAL & SCORING GUIDE – PART D

Value Added Data Products:			State Use Only	
Cost Item Description	**Unit**	**Proposed Cost**	**Est. Units**	**Total Est. Cost**
2' Topographic (vector):	100' Map Sheet		236	
10' Topographic (vector):	400' Map Sheet		127	
2' Topographic (DTM only):	100' Map Sheet		2,192	
10' Topographic (DTM only):	400' Map Sheet		332	
Building Footprints	100' Map Sheet		1,208	
Building Footprints	400' Map Sheet		551	
Building Points	400' Map Sheet		273	
Building Top Elevation	100' Map Sheet		142	
Building Top Elevation	400' Map Sheet		10	
Railroad Centerlines	100' Map Sheet		297	
Railroad Centerlines	400' Map Sheet		174	
See RFP Attachment 6.8 – Value Added Specifications for detailed descriptions of each of these data products.				
Part D Evaluation Cost Amount: *(sum of all total est. cost amounts above)*				

COST PROPOSAL & SCORING GUIDE – PART E

Technical Consulting:			State Use Only	
Cost Item Description	**Unit**	**Proposed Cost**	**Est. Units**	**Total Est. Cost**
Senior Technical Manager	Hours		375 hours	
Senior System Support	Hours		750 hours	
This shall involve assisting the State with determining the most cost effective and efficient technical and/or business processes for building and implementing a system to ensure the user community can access the data products being produced from this effort. The State will require the Proposer to become familiar with the State's existing computing and networking environment as well as the State GIS standard software products, and make recommendation(s) to the State for implementing a reliable system.				
Part E Evaluation Cost Amount: *(sum of all total est. cost amounts above)*				

COST PROPOSAL & SUMMARY SCORING

FOR STATE USE ONLY

The RFP Coordinator shall use the evaluation cost amount derived from the proposed cost amounts above and the following formula to calculate the COST PROPOSAL SCORE. Calculations shall result in numbers rounded to two decimal places.	**Part A Evaluation Cost Amount:** *(sum of all total est. cost amounts above)*	
	Part B Evaluation Cost Amount: *(sum of all total est. cost amounts above)*	
	Part C Evaluation Cost Amount: *(sum of all total est. cost amounts above)*	
	Part D Evaluation Cost Amount: *(sum of all total est. cost amounts above)*	
	Part E Evaluation Cost Amount: *(sum of all total est. cost amounts above)*	
	Total Evaluation Cost Amount: *(sum of all total est. cost amounts above)*	

Lowest Evaluation Cost Amount from <u>all</u> Proposals / **Evaluation Cost Amount Being Evaluated**	**X 300** *(maximum section score)*	**= SCORE:**	

ATTACHMENT 6.5

PROPOSAL SCORE SUMMARY MATRIX

RFP Coordinator **Date**

QUALIFICATIONS & EXPERIENCE **Maximum Points: 250**	**PROPOSER NAME**		**PROPOSER NAME**		**PROPOSER NAME**	
EVALUATOR NAME						
EVALUATOR NAME						
EVALUATOR NAME						
EVALUATOR NAME						
	AVERAGE SCORE:		**AVERAGE SCORE:**		**AVERAGE SCORE:**	
TECHNICAL APPROACH **Maximum Points: 450**						
EVALUATOR NAME						
EVALUATOR NAME						
EVALUATOR NAME						
EVALUATOR NAME						
	AVERAGE SCORE:		**AVERAGE SCORE:**		**AVERAGE SCORE:**	
COST PROPOSAL **Maximum Points: 300**	**SCORE:**		**SCORE:**		**SCORE:**	
PROPOSAL SCORE **Maximum Points: 1000**	**TOTAL SCORE:**		**TOTAL SCORE:**		**TOTAL SCORE:**	

ATTACHMENT 6.6

PERFORMANCE BOND

The Surety Company issuing bond shall be licensed to transact business in the State of Tennessee by the Tennessee Department of Commerce and Insurance. Bonds shall be certified and current Power-of-Attorney for the Surety's Attorney-in-Fact attached.

KNOW ALL BY THESE PRESENTS:

That we,

_____

(Name of Principal)

_____

(Address of Principal)

as Principal, hereinafter called the Principal, and

_____

(Name of Surety)

_____

(Address of Surety)

as Surety, hereinafter call the Surety, do hereby acknowledge ourselves indebted and securely bound and held unto the State of Tennessee as Obligee, hereinafter called the Obligee, and in the penal sum of 15% of the State's maximum liability as stated in Paragraph C.1 of the Contract, an amount equal to:

_____

(Dollar Amount of Bond)

good and lawful money of the United States of America, for the use and benefit of those entitled thereto, for the payment of which, well and truly to be made, we bind ourselves, our heirs, our administrators, executors, successors, and assigns, jointly and severally, firmly by these presents.

BUT THE CONDITION OF THE FOREGOING OBLIGATION OR BOND IS THIS:

WHEREAS, the Obligee has engaged the Principal for a sum not to exceed

_____

(Contract Maximum Liability)

to complete Work detailed in the Scope of Services detailed in the State of Tennessee Request for Proposals bearing the RFP Number:

RFP 317.30-108

_____

(RFP Number)

a copy of which said Request for Proposals and the resulting Contract are by reference hereby made a part hereof, as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, if the Principal shall fully and faithfully perform all undertakings and obligations under the Contract hereinbefore referred to and shall fully indemnify and hold harmless the Obligee from all costs and damage whatsoever which it may suffer by reason of any failure on the part of the Principal to do so, and shall fully reimburse and repay the Obligee any and all outlay and expense which it may incur in making good any such default, and shall fully pay for all of the labor, material, and Work used by the Principal and any immediate or remote sub-contractor or furnisher of material under the Principal in the performance of said Contract, in lawful money of the United States of America, as the same shall become due, then this obligation or bond shall be null and void, otherwise to remain in full force and effect.

AND for value received, it is hereby stipulated and agreed that no change, extension of time, alteration, or addition to the terms of the Contract or the Work to be performed there under or the specifications accompanying the same shall in any wise affect the obligation under this bond, and notice is hereby waived of any such change, extension of time, alteration, or addition to the terms of the Contract or the Work or the specifications.

IN WITNESS WHEREOF the Principal has hereunto affixed its signature and Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on this

_____ day of _____ , _____ .

WITNESS:

_____	_____
(Name of Principal)	(Name of Surety)
_____	_____
(Authorized Signature of Principal)	(Signature of Attorney-in-Fact)
_____	_____
(Name of Signatory)	(Name of Attorney-in-Fact)
_____	_____
(Title of Signatory)	(Tennessee License Number of Surety)

Office for Information Resources
GIS Services

Tennessee Base Mapping Program Technical Specifications

Prepared by
Office for Information Resources and
Comptroller of the Treasury
Revised:
June 30, 2004

Revision No. 4 Change Table: June 30, 2004:		
Change No.	**Description:**	
1.	Revise all sections for a variety of text edits, errors, document formatting, and typographical errors.	
	Table Impacted:	***None***
2.	Revise DTM compilation description; add compilation rules for tree outline features.	
	Table Impacted:	***None***
3.	Revise metadata collection requirements.	
	Table Impacted:	***None***
4.	Added TREE database layer description.	
	Tables Impacted:	***TREE.pat***
5.	Modifed Summary of Products section.	
	Table Impacted:	***None***

EXECUTIVE SUMMARY

A multipurpose Geographic Information System (GIS) digital database is being developed by the State of Tennessee. Conventional aerial photography at two different scales, 1:30,000 (1"=2500') and 1:7,500 (1"=625') together with airborne GPS and GPS ground control surveys are being acquired. This data source is used to create digital orthophotography to include a digital surface model; street centerline data, hydrography and drainage data, and limited vegetation cover data. Using this ortho image as a snapshot of on-ground conditions, the manually produced and maintained parcel maps by the State are digitized using the imagery as a backdrop.

The Base Mapping Program was initiated by the Comptroller of the Treasury, Division of Property Assessments in 1996 with a two county pilot program whose goal was to define specifications for this effort and to test the concept of a digital, state-wide mapping program. This first phase of the pilot program included Maury County and Lewis County in Middle Tennessee. At the conclusion of the first phase, examination of the results indicated several key factors. First, the concept was proven to be valid and the goal achievable with current digital mapping technologies. Second, the resulting specifications were adequate for the geography of the two pilot programs. One of the two pilot counties is characterized, as predominately rural while the other county is a mix of rural and metropolitan geographies. Since this program was envisioned as state-wide, and there are many communities in the State that are completely metropolitan, it was decided to continue the Pilot program with Phase Two for several areas of the State that are highly developed and predominately urban, while holding the specification fixed. It was determined that Hamilton, Montgomery and Sullivan Counties had ideal characteristics to validate the specifications developed in the first phase. Data creation for these counties was completed in December 1998.

The original specifications were the culmination of the Pilot Mapping Program. These specifications are intended to be a specific guideline for the Production Phase of the program. This represents the fourth revision since the Production Phase began in 2000. A recap of changes implemented in the previous revisions appears in Appendix B.

During the conversion of the parcel maps, linkage to the Comptroller of the Treasury Computer Assisted Appraisal System (CAAS) database is created. The basic geographic production unit is the county and associated 1"= 100' and 1"= 400' map sheets as identified on the Index Map for each county. Data conversion will take place on a county-by-county basis. There is no partial conversion for geographic areas smaller than a county.

The Task Flow Chart below is a generalized workflow for each county. This Technical Specification document is organized in a manner that reflects the logical workflow that is presented below in Figure 1. These specifications shall be adhered to for all GIS data products developed for the TNBMP.

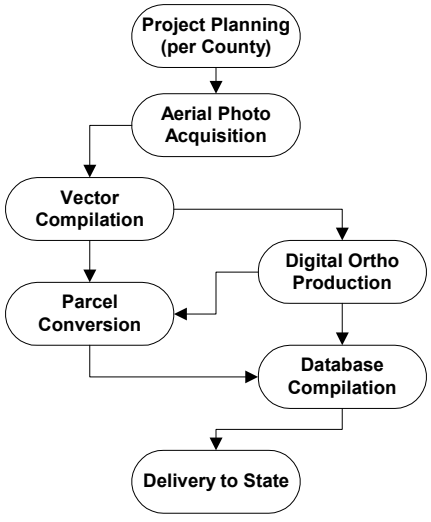

Figure 1: Task Flow Chart

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1 AERIAL PHOTOGRAPHY

General Requirements

Leaf-off flying conditions
Camera to have an Area Weighted Average Resolution (AWAR) of 85 minimum with forward motion compensation (FMC) and 6-inch lens focal length
U. S. Geological Survey camera calibration certificate within past 3 years to meet or exceed National Aerial Photography Program (NAPP) standards (copy must be supplied to the State)
Eight well defined fiducials to show on the exposed film
Numbering and titling of film to be electronically exposed
Scales 1:30,000 and nominally 1:7,500
Sun angle 30 degrees or higher
Panchromatic film
Terrain conditions: no snow, no flooding
Either Kodak or Agfa film may be used.
Real time differential GPS navigation and shutter release at predefined coordinates

Aerial photography will also conform to the ASPRS Draft Aerial Photography Standard as published in Photogrammetric Engineering & Remote Sensing, Vol. LXI (9), pp. 1097-1103 dated September 1995, except for the requirements for film titling. These standards do not include reference to airborne GPS and electronic film titling, both of which are required. Inertial Measurement Unit (IMU) technology is acceptable in place of conventional Aerotriangulation.

Layout/Flight Planning

The basis for collection of aerial photography and flight mission planning will be the county Index of Property Maps. During the Project Planning Phase for each county, an up-to-date Index will be obtained either from the State or the County Assessor's Office. Prior to acquisition of photography, a flight index will be prepared and submitted to the State for approval.

All photography will be acquired with exposures positioned on the center south edge and center north edge of each map sheet. This design will provide a nominal forward overlap of 65% and sidelap of 38%. Minimum forward overlap in all cases will be 60% and minimum sidelap, 30%.

Automatic exposure control is encouraged but not required. An integrated flight management system such as ASCOT™ is strongly recommended.

On-board GPS

Airborne GPS data will be logged using an onboard dual frequency GPS receiver and an equivalent ground base station receiver during the acquisition of the 1:30,000 scale photography and 1:7,500 scale photography. Both receivers will be of Ashtech Z12 or better specification. GPS data will be collected on both receivers at one-second intervals and processed using on-the-fly integer cycle carrier phase ambiguity resolution techniques to obtain positions on each exposure station within an RMSE of 5 cm. Supporting ground-based GPS surveys will be conducted with sufficient accuracy to support producing final orthophoto and vector data to meet National Map Accuracy Standards at the intended scales (Refer to Section 2).

Photo Development and Sensitometry

The aerial film will be of 4 mils nominal thickness. It will be all of one type and manufacture. The film will be processed and inspected for proper exposure and development range and to ensure that the film is free from scratches, blemishes, light streaks, static marks, tears, crimps, and other defects. It must be clear, sharp, and evenly exposed across the format. There will be no clouds or cloud shadows, smoke,

atmospheric haze, and objectionable shadows such as a prominent escarpment causing long shadows beyond it.

The film will be exposed and processed for a minimum density (D-min) of not less than 0.30 units above base fog, nor greater than 0.60. The maximum density (D-max) will not exceed 1.50 units. The point for density range is 1.0 density units for the average scene. Base plus fog will not exceed 0.20 density units. A step wedge (control strip) will be exposed on the leader prior to processing.

The density of the processed film will be measured with a transmission densitometer having a scale range of 0.0 to 3.0 and a 1-mm aperture. Readings will not be made closer than 1 inch to the frame edge nor closer than 1.5 inches from the frame corner. A characteristic curve and gamma plotted on standard Kodak curve-plotting graph paper is required.

Photo Reproduction

The following products will be produced:

1. The original film may be scanned from each scale of photography to cover the geographic area of each planned orthophoto, providing that an acceptable production process exists to meet all project requirements. Alternately, diapositives may be produced from the original film for scanning. The selected scan diapositives will be centered so that each orthophoto could be produced from a single diapositive image with no mosaicing.

2. A flight line index will be produced showing actual photo centers using the airborne GPS photo-center listing. The index will be overlaid to a raster rendition of the Tennessee State map at 1:250,000 or the 1:100,000 scale metric map series and will be supplied in Arc/Info coverage as described in the database design section (Refer to Section 6).

3. One set of analytical diapositives (aerotriangulation diapositives) may be printed for all exposures (at both scales) if circumstances require manual aerotriangulation to be performed. These diapositives will be used for aerotriangulation and will be cross-pugged to the scan diaps produced for orthophotography. Alternatively, the orientation parameters may be loaded into the ortho production system. The original film and analytical diapositives or scan analytical diapositives will be delivered to the State for archiving within twelve months of completion of each county.

2 PHOTOCONTROL AND GPS GROUND SURVEY SUPPORT

Methodology

The ground-survey photo control layout will be designed to support the airborne GPS (ABGPS) plan. Pre-paneled ground control points (GCP's) will be in the configuration of a "T" or a cross. For the 400-scale photography the targets will have legs a minimum of 20 feet long and 18 inches wide. For the 100-scale photography the targets will be a minimum of 7 feet long and 15 inches wide. The panels will be removed promptly after aerial photo acquisition. Photo-identifiable GCP's are acceptable in lieu of panels if necessary.

Geodetic Datum, Coordinate Systems, and Units of Measure

The survey should be performed as follows:

1. National Geodetic Survey Second-order horizontal and Third-order vertical
2. North American Datum (NAD) 83(90 Epoch) for horizontal and North American Vertical Datum (NAVD) 88 for vertical
3. Tennessee State Plane (Fipszone 4100) coordinate system
4. Unit of measure, U.S. Survey Foot
5. GPS surveys will be tied to Tennessee High Accuracy Reference Network (HARN)

Airborne and Ground GPS Control

A report describing the layout of the GCP's and results of the airborne and ground GPS surveys will be submitted. A generic ASCII file of control data will also be submitted. A check to validate the ground GPS against existing control that was used as part of the ground GPS network will be conducted. The control must be sufficient to insure the maps and orthophotos meet accuracy specifications.

The final report will include the following:

Description of the survey procedures, adjustment procedures, weighting, geoid model, and reference control
Point Descriptions and coordinates
NGS control data recovery sheets
Digital files:

1. Input data to adjustment
2. Error Log
3. GPS weight covariance
4. Adjustment results including
5. Listing of Input Data File
6. Summary of Files Used and Option Settings
7. Summary of Unadjusted Input Observations
8. Adjusted Coordinates
9. Coordinate Changes from Entered Provisional Values
10. Adjusted Positions and Ellipsoid Heights
11. Statistical Summary
12. Adjusted Observations and Residuals
13. GPS Residual Summary
14. Adjusted Azimuths and Horizontal Distances
15. Convergence Angles and Grid Factors at Stations
16. Error Propagation
17. Final Coordinate listing of all stations in Latitude Longitude & TN State Plane
18. NGS Control Data Recovery Sheets

Photo Control/GPS Aerotriangulation

For the photo control process, either an integrated on-board GPS/Inertial Measuring Unit (IMU) process or conventional aerotriangulation is acceptable as long as project accuracy specifications are met. The following processes will be followed as appropriate depending upon the photo control process implemented.

GPS/IMU:

Exterior orientation parameters will be computed through the integration of airborne GPS data and data from an IMU. The solutions will result from Kalman filter approach combining the carrier phase derived photo centers and IMU measurements of acceleration and angular rates to compute the exterior orientation parameters (X, Y, Z, ω, φ, and κ) of each exposure station. These values will allow the creation of stereo pairs without the need to perform Aerotriangulation. A final report will be provided that details and quantifies the integration of the GPS data and the IMU data.

CONVENTIONAL AEROTRIANGULATION:

Aerotriangulation will be performed in a hard copy environment using first-order analytical stereoplotters and precision point transfer (pugging) devices. The final aerotriangulation adjustment of the photography block will be completed using the airborne GPS photo center coordinates and further supported by photo-identifiable or pre-paneled ground control points acquired using GPS surveying or conventional surveying if necessary. Self-calibration simultaneous bundle block adjustment will be used. Softcopy aerotriangulation techniques may be considered as an alternative to the above as long as project accuracy specifications are maintained.

The final root-mean-square-error (RMSE) for the aerotriangulation adjustment will be 1:10,000 or better of the flying height for both scales of photography involved. A final aerotriangulation report outlining the approach and final results is required. A text file with all results suitable for loading into other photogrammetric mapping systems is also required.

3 PHOTOGRAMMETRIC DATA CAPTURE

Digital Terrain Models

Digital Terrain Models (DTM) will be generated using an analytical stereoplotter or softcopy workstation for compilation. Note that 3D Planimetric Data collected for these specifications (discussed in detail in the following sections) are features that will be included in the DTM collected.

DTM generation will be carried out on the 1:30,000 scale photography (where the smaller scale orthophoto generation is planned) and on the 1:7,500-nominal scale photography (where the larger scale orthophoto coverage is planned). In addition, the 3D data points captured in the hydrography and transportation vector data coverage will be added to the data sets to further strengthen the vertical accuracy of the DTM. The 2D data points captured in the tree-covered areas vector data coverage will not be added to the DTM.

The DTM data sets are intended for the production of the digital orthophoto data set.

Elevation data points (mass points) will be obtained to describe all tops, bottoms, and areas where the break lines are more than one inch apart at map scale, in such a manner that the resultant DTM correctly represents the shape of the terrain. Manual compilation methods will be used for data capture of all breaklines. Auto compilation methods for capture of mass point data are acceptable. Spot elevations in open water should be deleted.

DTMs will be compiled over-edge, out to at least 1 inch at map scale beyond the neat boundary of the map sheet so that edge effects will be eliminated. No clipping is allowed at sheet edges.

All DTM data will be supplied as points and break lines so that the least generalized data can be archived for future use. Break lines will be appropriately identified as to the planimetric feature that they correspond to. In order to avoid unnatural visual appearance of bridge decks in the ortho images produced from these DTMs, street centerlines and edge of pavements will be included as break lines with the elevation value associated with the bridge deck included in the DTM.

Planimetric Feature Definitions

All hydrographic and transportation vector data will be collected in 3D and be topologically clean. All tree-covered areas will be collected in 2D and be topologically clean. All vector data will be delivered in English units (US Survey Feet) and supplied in the Tennessee State Plane Coordinate System in NAD83 (90).

The sheet neat lines will be based on the current property maps that are in Tennessee State Plane NAD27. Because the transformation from NAD27 to NAD83 is not consistent across the state, an origin point of North 549,378 feet, and East 1,954,503 in NAD83 (90) was selected as the corner of four sheets. The corners of all other sheets can be computed from this origin point by adding or subtracting the number of sheets times the sheet size in feet. A sample computation is shown in Table 1. In the worst case, this will cause the neat lines to move by about 30 feet (maximum movement is in East Tennessee).

Easting (feet)	Northing (feet)	
1,654,700	460,000	Any point in the sheet
1,954,503	549,378	Origin point
-299,803	-89,378	Difference in coordinates
-85.658	-44.689	Divide by the sheet size to get number of sheets from the origin
-85	-44	Truncate to integer = Number of full sheets from the origin.
-297 500	-88 000	Multiply by number of feet per sheet (3500 x 2000).
1 657 003	461 378	Add to origin to get coordinate of SE sheet corner.

Table 1. Sheet Position Calculations

All final vector data will be supplied on appropriate digital media in map sheet order, for each county. The planimetric data will be delivered by 1" = 400' scale sheet. If two adjacent counties are being mapped concurrently, the sheets for one county will not be submitted for both. They will each have separate sheet numbers appropriate for each county.

HYDROGRAPHY

Feature	1:30,000 Photography	1:7,500 Photography
Standing Bodies of Water	✓	✓
Rivers	✓	✓
Streams	✓	✓
Closing Line	✓	✓

1. All waterways will be mapped as streams and show a continuous network.
2. All clearly defined channels will be mapped even though they have no water showing. Err on the side of too much mapping of streams, not too little.
3. Standing bodies of water will be mapped as closed polygons.
4. Rivers or double line streams will be mapped as closed polygons.
5. Waterways over 25 feet wide will be mapped as double-lines (closed polygons) while those less than 25 feet wide will be mapped as single-line features at both scales.
6. Artificial closing lines will be collected and included wherever a double-line stream or river and a lake or pond join.
7. All standing bodies of water will be collected as closed polygons with no type distinction required.
8. The watercourses in the stereo model will be captured as best determined from the lowest point in the model to the highest point.
9. For any hydro feature that is obscured by a bridge or other man-made feature, a hidden feature will be captured in a manner that ensures connectivity of the down-stream to up-stream drainage and completes the requirement for polygon closure for bodies of water.

TRANSPORTATION

Feature	1:30,000 Photography	1:7,500 Photography
Road Centerlines	✓	✓
Driveway Centerlines (200 ft minimum length)	✓	✓
Edge of Pavement		✓

1. All graded roads, gravel-surfaced or otherwise improved will be collected.
2. Edge of pavements and road centerlines will not be classified. Public vs. private will not be distinguished. Paved vs. unpaved will not be distinguished.
3. Unimproved roads (logging roads, jeep trails) will not be collected. Parking lots and golf course cart paths are not to be mapped.
4. Bridges will not be mapped – centerlines and edge of pavements will run straight across bridges, over and under passes, and streams.
5. Hidden road lines will be collected for any transportation feature that is obscured by a bridge or other man-made feature.
6. Driveways over two hundred feet long will be mapped. Only the centerline of driveways will be shown. A driveway is an improved vehicular traveled way that leads from a road to one or more structures.
7. Do not use fillets at intersections. The edge of pavement (EOP) at these intersections will be collected.
8. Road centerlines and driveway centerlines will be uniquely identified.
9. Centerlines and edge of pavements will not be attributed with names.
10. The actual edge of pavement (EOP) will be mapped and will only be collected for the 1:7,500 photography. Copy parallel from one side to the other is unacceptable. The EOP is compiled as a continuous feature. When a road crosses a model boundary the line strings will be mathematically snapped in 3D. For the centerlines of the roads at both scales each segment of centerline from one intersection to the next will be a separate element. The joins from one centerline element to the next will be a 3D mathematical snap.
11. Road Centerline, Driveway Centerline and EOP Improved Roads shall be differentiated when occurring on Bridge Deck. Each feature occurring on a bridge deck will be split at the edge of the bridge deck identified visible pavement surface changes or the point at which the abutment (wall) starts. The split point from one type feature to the corresponding on-deck feature will be a 3D mathematical snap.

TREE-COVERED AREAS

Feature	1:30,000 Photography	1:7,500 Photography
Tree-covered areas	✓	

1. Tree-covered areas will be collected in 2D and **not** included in the DTM.
2. All contiguous tree covered areas greater than 10 acres in size shall be collected as topologically correct polygon features.
3. The apparent area covered by tree canopy shall be collected.
4. Tree outlines shall be collected from the 1”-400’ source photography only.

4 ORTHOPHOTOGRAPHY

Scanning of Film for Orthophotography

Scanned images for orthophoto generation will be produced in TIFF 8-bit grayscale format at the following ground resolution:

- 1:30,000 scale photography - 2 ft. x 2 ft. ground pixel resolution
- 1:7,500 nominal scale photography - 0.5 ft. x 0.5 ft. ground pixel resolution

Scanning will be done with a calibrated, photogrammetric quality scanner. The geometric accuracy of the scanner after calibration will be less than or equal to 1.5 microns RMS per axis. Film will be scanned, not paper prints. The scanned image must be adequate to allow the final generated orthophoto to meet or exceed National Map Accuracy Standards for the intended scale of the orthophoto. Scan resolution will be finer than that of the final image delivered as an orthophoto. Spot checks will be made to assure that the orthophotos meet NMAS.

The scanned images will be in black-and-white. The radiometric quality of the scanned images is critical to subsequent processes. There will be no bad scan lines, visible scratches, dust, lint, dirt, smudges, or other cosmetic blemishes. Automatic scratch removal software may be used. The scanned images will be compared with the source photograph to verify that the gray scale is acceptable. Dark tones and highlights will be examined to assure that the full range of gray shades in the original negative is preserved.

Archiving of the raw scan data is not required.

Digital Orthophotos

Using the aerotriangulation solution or the integrated GPS/IMU data, the DTM data, and the scanned image files, digital orthophotos will be produced as follows:

1. The 1:30,000-scale photography will be used to produce digital orthophoto sheets that are 14,000' (East-West) by 8,000' (North-South). Each orthophoto will have a ground pixel resolution of 2.0' x 2.0'.
2. The 1:7,500-scale photography will be used to produce digital orthophotos sheets that are 3,500' (East-West) by 2,000' (North-South). Each final orthophoto will have a ground pixel resolution of 0.5' x 0.5'.
3. The digital orthophotos will have a horizontal accuracy of +/- 2 pixels RMSE (4 feet @ 1”=400’, 1 foot @1”=100’) on all check points taken on clearly defined image detail. The mismatch between two adjoining orthophoto sheet edges will not exceed five (5) pixels.
4. The final digital orthophoto will cover the entire neat area of each sheet with no over-edge, even though the DTM will have been compiled over-edge.
5. The neatline will be orthogonal and the extent will be an even number of pixels. Neat lines are inherent in the vector data and are superimposed on the ortho image.
6. The cut-line between orthophotos made from 1:30,000 scale photography may be straight coinciding with the sheet neat line. The orthophotos made from the 1:7500 scale photography should be mosiaced to minimize the undesirable effect of building lean.
7. All orthophotos will be delivered on appropriate digital media. The files are to be written and delivered in map sheet order. Image format shall be striped GeoTIFF. The image must be uncompressed and have horizontal scan lines with a top left origin.
8. In addition to the required GeoTIFF format identified above, all orthophotos for a county will be compressed using multiresolution seamless image database (MrSID) format. The 1:30,000-scale photography will be delivered as a county-wide mosaic, while the 1:7,500-scale photography will be delivered as individual map sheets, unless otherwise specified by the State. Imagery at both scales shall be processed using a target compression of 20:1, with an actual compression ratio of no less than 14:1. The final products will be delivered to the State on appropriate digital media in MrSID format.

9. Each orthophoto will be accompanied by appropriate quality control reports: image accuracy report and digital orthophoto evaluations report form, together with written explanation criteria pertaining to the evaluation report.
10. Even if all sixteen 100-scale orthophotos are produced for a 400-scale map sheet, the 400-scale orthophoto will also be required.

Hard Copy Orthophotos

Upon acceptance of each digital orthophoto, hard copy plots will be generated. These plots will match the parcel sheets and formats and dimensions of the existing parcel maps. Each hard copy orthophoto sheet will have the following data embedded around or into the image.

Marginalia and format data (to be provided by the State).
Tennessee State Plane 5-inch grid interval.
The neatline (edge of image) will be orthogonal, and the extent will be 7000 by 4000 picture elements (pixels).

Final black-and-white Mylar matte reproducible sheets will be plotted at either 1"=400' or 1"=100' dependent on the scale being produced with a resolution of 600 dpi or higher.

File Naming Convention

The file naming convention for digital ortho files is as follows:

1. 1” = 400’ scale digital orthophoto sheets will be named with five characters, the first two representing the county code and the next three being the 400-scale sheet number.

   EXAMPLE: The ortho image file for Map Sheet 34 in Maury County would be named 60034.TIF.

2. 1” = 100’ scale digital orthophoto sheets will be named with six characters, the first two representing the county code, the next three the 1” = 400’ scale sheet, and the alpha character identifying the 1” = 100’ scale sheet.

   EXAMPLE: The ortho image file for Map Sheet 112A in Montgomery County would be named 63112A.TIF.

3. 1”=400’ scale digital MrSID mosaic will be named with six characters, the first two representing the county code, an underscore character, and “400”, denoting the 1”=400’ scale mosaic.

   EXAMPLE: The MrSID in Maury County would be named 34_400.SID & 34_400.SDW (MrSID world file).

4. 1”=100’ scale digital MrSID orthophoto sheets will be named with six characters, the first two representing the county code, the next three the 1”=100 scale sheet, and the alpha character identifying the 1”=100’ scale sheet.

   EXAMPLE: The MrSID ortho image file for Map Sheet 42C in Montgomery County would be named 63042C.SID & 63042C.SDW (MrSID world file).

A listing of county codes is included in Appendix A.

5 CADASTRAL MAPPING

Methodology

The approach for parcel conversion described in these specifications is the best-fit method. While the data dictionary shows Coordinate Geometry (COGO) specifications, these fields, and discussion of their use, are intended to assist in on-going post conversion maintenance.

The following guidelines will be used for the best-fit approach:

- The parcel map is the primary source for the geometry of all parcels.
- The planimetric files and the orthophoto are the primary sources for location for all parcels.
- The parcel maps will be the source for location of parcels when planimetric or ortho detail does not exist.
- The parcel maps contain geographic relationships between features, which must be utilized in the conversion process, such as parcel line distances to logging roads or trails or valleys.
- Building lean should be accounted for in the mapping process.
- All line work will be edge-matched on a file-to-file basis. All files must be 100% edge-matched.
- The file-working unit will be the 400-ft scale map sheet (Refer to Section 6, Map Librarian). Separate 50-ft and 100-ft scale map sheet data will be merged into 400-ft scale files.
- Plots of every parcel map (400', 100', and 50') will be created for purposes of quality review except in instances where the limited series of 50' maps are being eliminated and incorporated into the parent 100' map sheet (see County Index, Map Scale 1:600 for details).

Planimetric features such as pavement centerlines and pavement edges are displayed along with any other features that might exist. These planimetric features provide the framework for the placement of parcel lines. In addition, the digital orthophotos are used as reference information for the correct placement of parcel lines insuring a fit to obvious occupation lines.

These are the basic steps in the parcel conversion process:

- Data Conversion (digitizing and best fit)
- Edit (annotation and cartographic enhancements)
- Primary Quality review
- Digital corrections
- Format and delivery (interim and final deliveries)
- Final Quality review

Source Documents

The source documents for parcel conversion are the existing parcel maps, digital ortho image, planimetric and DTM data files. The parcel map Index is available as a secondary source document. A limited extraction from the county assessment database will be used as a validation and verification source for the GISLINK attribute.

All source documents will be provided by the State. The assessment database extraction will be provided by the State. All source documents must be returned in the same condition as received.

Every digital parcel map that corresponds to the active 400' and 100' index will be plotted and provided to the State of Tennessee for quality review along with an inventory listing of each map sheet included. Accompanying these check plots will be the corresponding preliminary digital parcel database as defined in these specifications. The DPA and/or county assessment personnel will review these checkplots for content errors and will provide appropriate feedback for correction. The State reserves the right to reject a checkplot submission in its entirety if there is significant errors or if the inventory list does not match the maps provided. The State may also request a set or series of verification plots to ensure corrections have been applied.

County Index

The Division of Property Assessments (DPA) developed a countywide index for each county in the state during the cadastral mapping program in the 1960s. The county index is that portion of the Stateplane grid that overlaps the total area of the county. The county index indicates standardized map scales for 1:4800, 1:1200, and 1:600 for the majority of Tennessee counties. This allows for a seamless map to be developed across county boundaries and is essential in the development of a standardized system of a statewide parcel based GIS database. In the event that a particular county has a parcel mapping system that was not originally developed to the statewide standards then a repining process must be implemented to meet the statewide standards and these digital parcel specifications.

Map Scale 1:4800

Map scale 1:4800 or 1" = 400' is the smallest of the map scales. These maps correlate to the individual grid cells in the county index and have dimensions of 14,000 x 8,000 feet. The numbering system usually starts in the upper left portion of the county with map one and continues sequentially from top to bottom until all grid cells that fall within the county are numbered (Figure 2). The total number of 1" = 400' maps depends on the size of a county and usually range between 100 and 200 map sheets. The 400' map sheets are the foundation of the mapping program and are the essential unit for developing and maintaining digital map data.

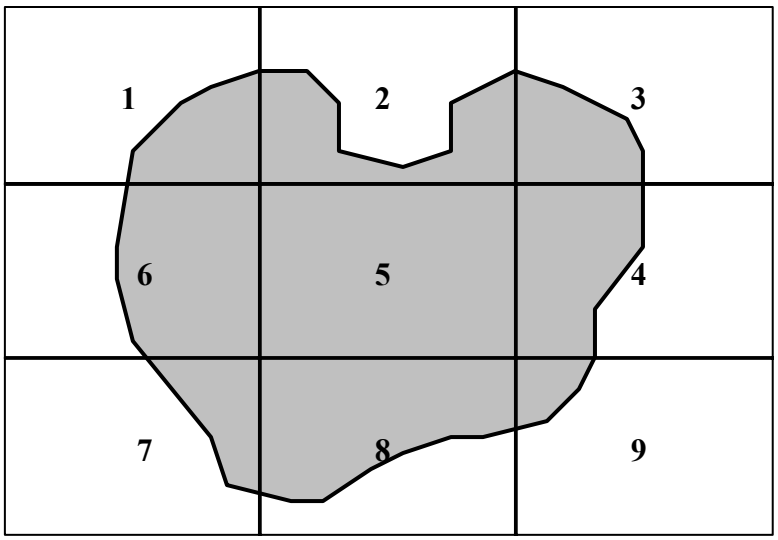


Figure 2. **1:4800 Map Sheet Numbering Scheme**

Map Scale 1:1200

These map sheets represent a subset of the 400' map sheets that have dimensions of 3,500 feet x 2,000 feet. There can be up to sixteen 100' map sheets within each 400' map sheet. The numbering scheme of the 100' map sheet (Figure 3) begins with "A" in the upper left corner and ends with "P" in the lower left corner. The 100' map sheet is labeled in a serpentine pattern. The 100' maps typically cover areas of residential development in an urbanized area. Accordingly, not all 100' sheets within a 400' map sheet are present. There will be some rural 400' map sheets that may not have any 100' insets. The total number of 100' map sheets varies significantly between counties depending on urbanized characteristics of the county. New 100' map sheets will be periodically created to account for the urban growth. Parcels contained in the 100' map sheets will be digitally included within the 400' map sheet file. 100' sheets will continue to be used for cartographic purposes as well as parcel identification number (PIN) assignment.

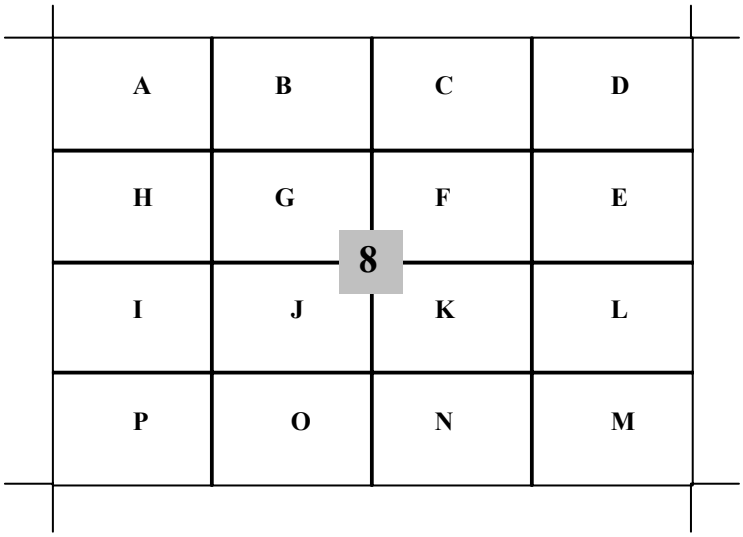


Figure 3. **1:1200 Map Sheet Numbering Scheme**

Map Scale 1:600

This map scale is utilized in highly urbanized areas such as the Town Square or central business district. There can be up to four 50' maps within a 100' map sheet. The numbering scheme of the 50' map sheet (Figure 4) begins with "A" in the upper left corner and ends with "D" in the lower left corner. The 50' map sheet is labeled in a clockwise direction. These 50' map sheets have dimensions of 1,750 x 1,000 feet but are not frequently used or developed. Some counties may not have any 50' map sheets. Similar to the 100' map sheets, they are dependent on the level of urbanization within a particular county. Condominium complexes are another example of where the use of 50' map sheets is necessary. These 50' map sheets are also included with the 400' map sheet file. 50' sheets will continue to be used for cartographic purposes as well as parcel identification number (PIN) assignment.

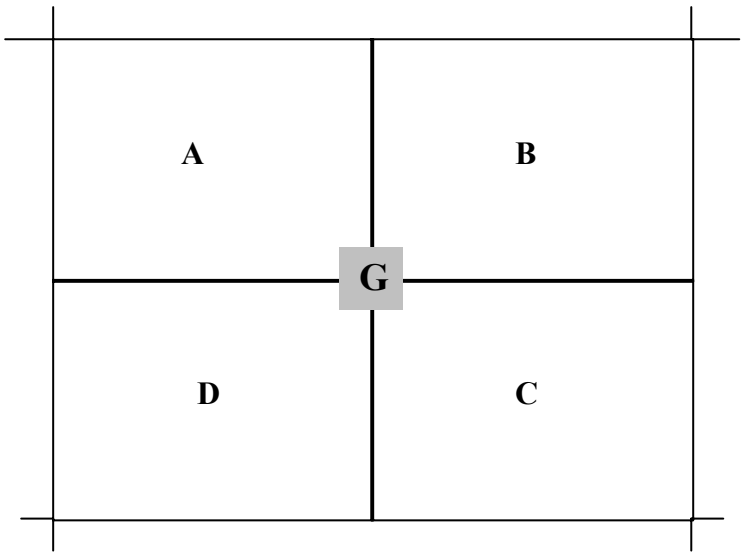


Figure 4. **1:600 Map Sheet Numbering Scheme**

During the course of data conversion from manually produced and maintained parcel data to digital parcel database, the State provides each county with the option of eliminating the existing limited 50' scale map sheets. Data contained on these map sheets is retained, but incorporated into the parent 100' map sheet. This process will involve repining all existing parcels contained on these 50' map sheets as discussed in the following section. The State will notify the conversion vendor prior to the commencement of parcel conversion on the appropriate course of action to take with regards to any 50' map sheets that may exists for that county.

Repining

The repining process involves shifting the X and/or Y coordinates of the county index to match the Stateplane grid that overlaps the total area of the county. Sometimes this X and Y shifting results in the remapping of parcels at 1" = 200' to 1" = 100' which in turns requires that the county index and the extent of each individual map sheets be adjusted.

Tennessee's cadastral mapping standards require a map based PIN for each individual parcel as described in detail in the Cadastral Feature Definitions section. The adjustment of the county index move individual parcels from one map sheet to another map sheet resulting in a change to the parcel identification number (PIN) for that individual parcel.

The repining process is dependent upon capturing the old PIN from the original source documents and creating a new PIN based on the adjusted county index. For counties requiring repining, the new PIN is

created in the GISLINK attribute and the old PIN is retained in the GISLINK2 attribute. (Refer to Section 6, Parcel layer description).

Repining may also occur in counties that choose to eliminate their 1" = 50' maps. These parcels are remapped to 1" = 100' and the corresponding PINs are changed accordingly. The same procedure of populating the GISLINK and GISLINK2 attributes is applied to these parcels as describe in the preceding paragraph.

Once the State receives the final digital data, the Division of Property Assessments executes a procedure to update the CAAS (real and personal property) records based on the GISLINK and GISLINK2 attributes.

Cadastral Feature Definitions

The following definitions, descriptions and discussions represent the features that are captured as part of the PARCEL data layer. Each discussion is primarily intended to be a description of how the feature appears on the typical manually produced parcel maps. Also included is information that is intended to help clarify how the feature is represented in the Database Design Section (Refer to Section 6).

Planimetric features included on the source documents are fence lines, tree outlines, ridge lines, drainage, pavement edges, field lines, etc. None of these features are captured from the source parcel maps except as noted in the "Database Design, Inclusion of Planimetric Features" Section 6. Specifically in instances where the digital compiled hydrography is captured during extremely high or low water levels, line work will be captured from the parcel map sources.

Figures 6-10, which appear at the end of this section, represent reproductions of 100' and 400' parcel maps with an example of each of these features appropriately identified. Included with each feature description is a reference to the specific figure that the item appears on. Note that in some instances such as the GISLINK, the feature does not exist on manually produced parcel maps and does not appear in any of the figures. Every item below, except for assessment line, will have one or more references in the Database Design Section 6.

ACREAGE (FIGURE 2 AND FIGURE 7)

Five types of acreage are indicated on the source map. They are deeded, calculated, survey, easement and levee. Deed and calculated acreage appear on most maps while the others are shown less frequently. Statewide, the acreage will vary in the way they are shown on some source maps. The chart below identifies type of acreage and how they may appear on the source map. Acreage should be captured and shown on the digital map as illustrated in the digital map column to improve standardization.

Type of Acreage	Source Map	Digital Map
Deed Acreage	AC, AC<u>d</u> or ACD	AC
Calculated Acreage	AC<u>c</u> or ACC	ACc
Survey Acreage	AC<u>s</u> or ACS	ACs
Easement Acreage	ACcE, ACE or AC<u>e</u>	ACe
Levee Acreage	AC(L) or ACLevee	ACLevee

For all scale map sheets the acreage is shown parallel to the top and bottom map neatline. The acreage will be placed directly under the parcel number and centered for 400' scale map sheets. Acreage on 100' scale map sheets is centered and placed directly under the lot number-letter (parcel numbers on 100' maps appear in the upper right hand corner). On 400' scale map sheets, acreage for parcels under one acre are not shown.

ASSESSMENT LINE (FIGURE 5)

An assessment line is a parcel boundary that identifies a portion of a parcel that extends beyond a county line into an adjacent county. A landhook is usually placed across the county line to indicate that a portion of a parcel is in an adjacent county but the entire parcel is assessed in the county being mapped. There is no unique symbology for an assessment line. These lines are shown as a parcel line but are usually distinguished with annotation indicating the extent of the county assessment. As a result, assessment lines are not included in the database design specifications.

CITY LIMIT LINE (FIGURE 4)

The city limit line identifies the extent of incorporated areas and will not form a parcel boundary. If a city limit line is coincident with any other line then both lines are captured. All city limit lines should form complete polygons. The city limit lines should be captured only from the 400' scale maps. City limit lines depicted on 100' scale maps are incomplete polygons and should be discarded.

CITY NAME (FIGURE 5)

The city name identifies the incorporated jurisdiction and appears on the inside of the city limit line. It is placed parallel to the city line at least once per map without overstriking any other text. The 400' scale map sheets are the primary source for this information.

CIVIL DISTRICT LINE (FIGURE 5)

Counties are divided into civil districts and are used for deed descriptions and historical purposes. Civil district lines will not form a parcel boundary. If a civil district line coincides with other features then each is captured. Gaps in civil district lines may occur because routine maintenance was suspended several years ago. The 400' scale map sheets are the primary source for civil district lines.

CIVIL DISTRICT NAME (FIGURE 5)

The civil district name appears on the inside of the civil district line. It is placed parallel with the district line at least once per map without overstriking any other text. The 400' scale map sheets are the primary source for civil district lines.

COMMON AREA

Common areas represent land defined as part of a condominium complex usually having joint ownership among all residents. (Refer to notes section in Parcel coverage specifications).

CONDOMINIUM FOOTPRINT (FIGURE 7)

Condominium footprints are line features that outline the shape of the condominium building. These are depicted as either parcels or special interest areas on the source maps. The footprint is shown as a parcel line if there is a parcel number in the footprint. If it has a special interest number then a solid, black, thin line represents the footprint.

CONTROL MAP NUMBER (FIGURE 5 AND FIGURE 7)

On 400' scale maps control numbers are used to identify portions of parcels that are controlled on another map. Control numbers for 400' scale maps consist of a parcel number followed by a dash and the controlling map number in a circle and underlined. On 100' and 50' scale maps, control numbers are used to identify groups of parcels that are controlled on another map. Control numbers for 100' and 50' maps consist of a group letter bound by quotations followed by a dash and the controlling map number and underlined. Underline is included in the text font size. They should be placed parallel to the top and bottom map neatline.

COUNTY LINE (FIGURE 5)

The county line is an administrative boundary that defines the total area of a county. The county line forms a parcel boundary except when the parcel is split by the county line (Refer to Assessment Line). In these situations assessment lines are used to identify a portion of the parcel in the adjacent county. Only the county line is captured if a parcel coincides with the county line and if a road or railroad line coincides with the county line. Only the state line is captured when a county line is coincident with a state line.

COUNTY NAME (FIGURE 5)

The county name is to appear on the inside of the county line. It is placed parallel to the county line at least once per map without overstriking any other text. Adjoining county names appear on the outside of the county line.

CREEK NAMES (FIGURE 5)

Creek names are to be placed in italics at an angle with the creek featured.

EASEMENT LINE (FIGURE 5)

Easement line identifies an area of ingress and egress through a parcel of land. Easement lines do not form parcel boundaries. Easement lines should be captured as shown on the source parcel map.

EASEMENT TEXT (FIGURE 5)

Easement text identifies the easement area and width. Text can be placed inside or outside of the easement and parallel with the easement lines.

ERRATA TEXT

This text does not appear on the source documents but is generated during data conversion. Errata text is used to identify specific problems related to data conversion that requires investigation and resolution by the State and/or local government staff. Examples of these problems include but are not limited to; two parcel numbers for one parcel, missing dimensions, incorrect edge matching, incorrect map control number or any other conflict of this nature. Errata text should be short, descriptive and clearly identify the problem.

EXEMPT SYMBOLS (FIGURE 5)

Exempt symbols are used to identify churches, cemeteries and schools. Church and school symbols are placed parallel to the top and bottom map neat lines while cemetery symbols are placed as shown on the source parcel map. Where the exempt text appears as “Church School” a school symbol is placed.

EXEMPT TEXT (FIGURE 5)

Exempt text identifies the names of cemeteries, schools and churches. All exempt text should be placed as shown on the source parcel map and parallel with the top and bottom map neat lines.

FORMERLY ON TEXT

As part of the conversion process, some parcels may be being shifted off the map from which they were originally located. An effort is made to match the specification for text placement of the parcel number but the map it is originally on takes precedence over this. In the case where the parcel number must be placed on a different map, the following text is placed on the map where this new parcel number is located:

F/O<map-number>

The text is placed using the miscellaneous text specifications.

GAS PIPELINE (FIGURE 5)

Gas pipeline is the approximate location of a gas line. It is captured as shown on the source parcel map and is shown with special line symbology.

GAS PIPELINE TEXT (FIGURE 5)

Gas pipeline text identifies pipeline ownership. Text should be placed above or below and parallel with pipeline. The parcel map is the primary source for this information.

GISLINK

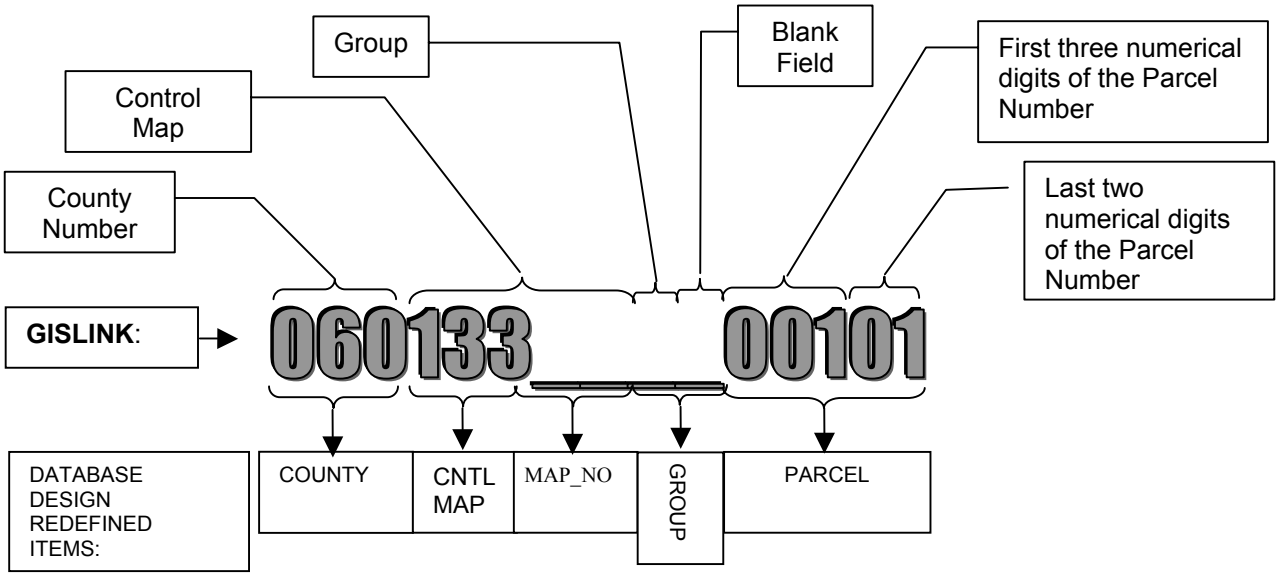
Every parcel should have a GISLINK or PIN (parcel identification number) assigned to the polygon label. The GISLINK is used as the unique identifier and serves as the link to the assessment database. The GISLINK item is found in the parcel coverage. The GISLINK value is composed of very specific combinations of the county code, control map number, 100' and 50' control map letter, group letter, parcel number and split number.

If a GISLINK value cannot be determined for a parcel, a value of 998 (unknown) is assigned to the Code item and the GISLINK field is assigned a unique value to distinguish it from other unknown regions. The unique value will be composed of the county number, control map number, 100' and/or 50' control map number (if appropriate), the text string "UNK", and a 2 digit sequential number starting with 01 for each map sheet. For example, the first unknown GISLINK value for the first parcel on map 133 in county 006 would be 006133____UNK01, the second unknown GISLINK for the same map would be 006133____UNK02, etc. (Note: there are 4 blank spaces between 133 and "UNK".)

The assignment of the GISLINK value for 400', 100', and 50' maps is illustrated in the following three graphics. The underscore(s) (_) in each of the graphics below represents a blank space in the actual GISLINK field value. Do not insert an underscore in the GISLINK field; blank spaces are valid and necessary.

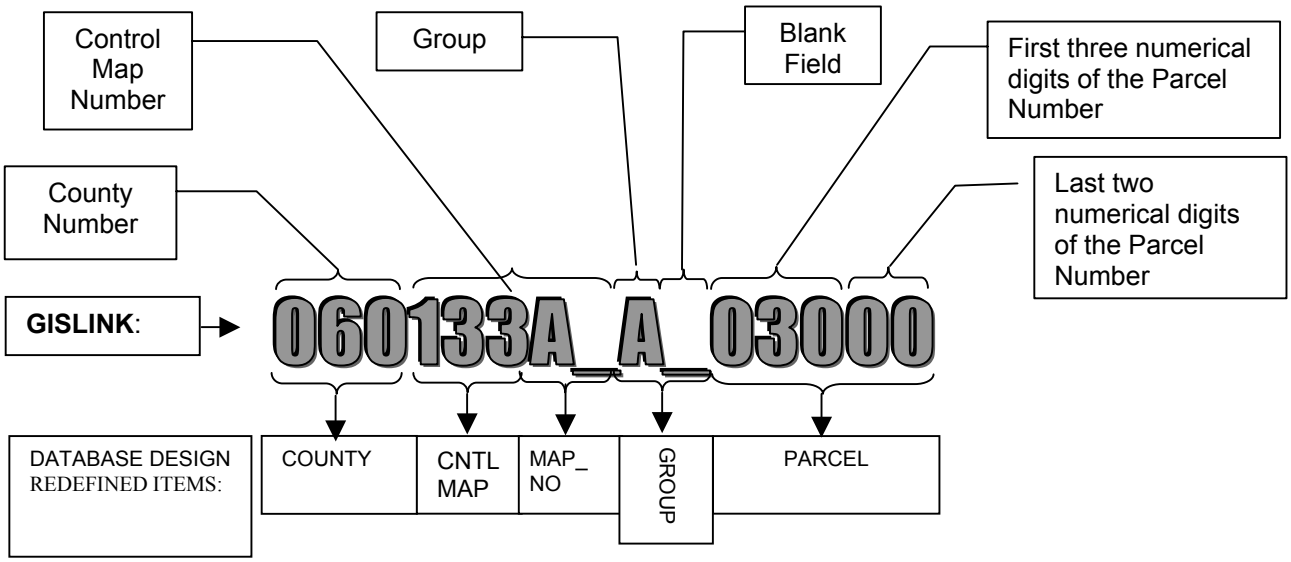
400' Example--parcel 1.01 on map 133 translates to the GISLINK value: 060133 00101

060	County number
133	Control map number
	100' Control map insert letter
	50' Control map insert letter
	Group letter
	Blank space
001	Parcel number
01	Split number (If the parcel does not have a split number, two zeros should be placed instead).



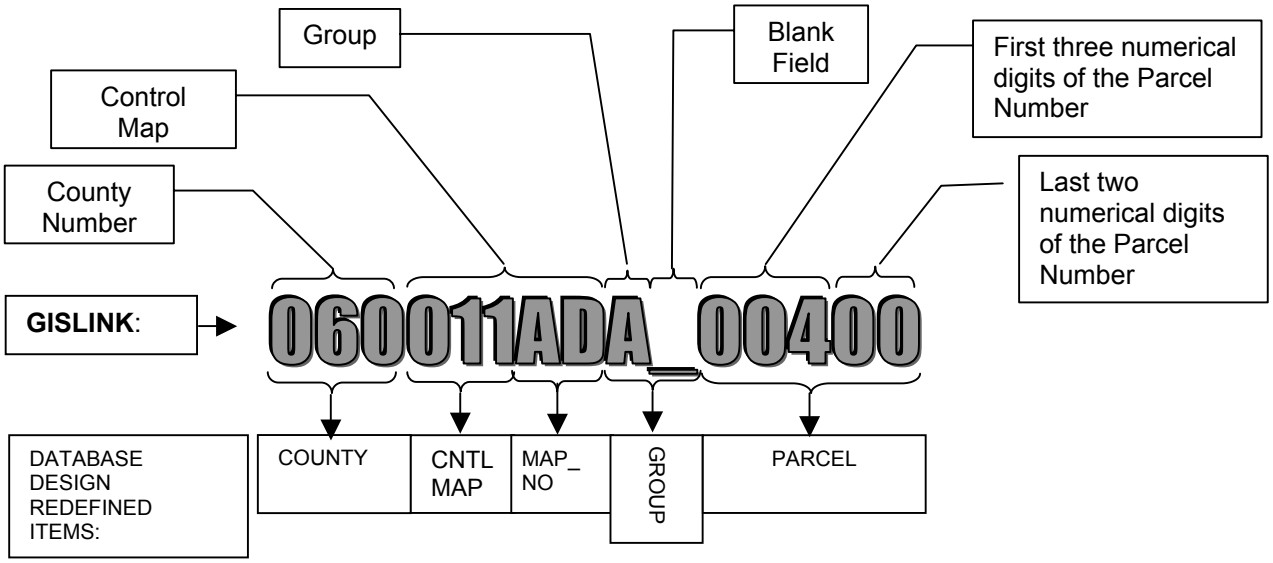
100' Example--parcel 30 in group A, on map 133A translates to the GISLINK value: 060133A A 03000

060 County number
133 Control map number
A 100' Control map insert letter
50' Control map insert letter
A Group letter
Blank space
030 Parcel number
00 Split number (If the parcel does not have a split number, two zeros should be placed instead).



50' Example--parcel 4 in group A, on map 11AD translates to the GISLINK value: 060011ADA 00400

060 County number
011 Control map number
A 100' Control map insert letter
D 50' Control map insert letter
A Group letter
Blank space
004 Parcel number
00 Split number (If the parcel does not have a split number, two zeros should be placed instead).



GROUP CORNER LINES (FIGURE 6)

Group corner lines are short, uniform, solid heavy lines that distinguish the boundary of each subdivided grouped area. They are usually coincident with parcel lines and only appear on 100' and 50' maps.

GROUP TEXT (FIGURE 6)

Group text identifies subdivided grouped areas and is part of the GISLINK field. Group text is shown as a large uppercase letter with quotations and is usually found in the center of the grouped area. Group text is placed parallel to the top and bottom map neat lines and only appears on 100' and 50' scale maps. Placement of group text should not overstrike other lines and text.

GROUP CORNER TEXT (FIGURE 6)

Group corner text is an integral part of the group corner line and the group text. Group corner text is displayed on the parcel map as the smaller uppercase letter with quotations and is usually found in the corners of the grouped area. Group corner text helps define the boundaries of each subdivided grouped area. As in group text and group corner lines, the group corner text is found only on 100' and 50' scale maps.

LAKE-POND NAMES (FIGURE 5)

Lake-pond names are to be placed in italics parallel with the top and bottom map neat lines.

LANDHOOK (FIGURE 5)

Landhooks are placed to show continuation of parcel ownership that is split by features such as roads or rivers and should be placed as shown on the source parcel map.

LEADER LINE

The purpose of a leader line is to associate text with a specific geographic feature. Leader lines are used when text placement occurs outside the boundaries of small features (e.g. parcel). Leader lines can be used with all annotation and are placed in the same annotation subclass as the text they reference. Leader lines are captured as an ArcInfo arrow with no angles or changes in direction, or arrowhead. This ArcInfo leader is part of the annotation feature class so that it is stored with the text in the appropriate annotation subclass.

LOT ACREAGE TEXT (FIGURE 6)

Lot acreage text is placed in the center of the parcel and directly under the lot number or letter. Text is also placed parallel to the top and bottom of map neatline and appears only on 100' and 50' maps.

LOT LINES (FIGURE 6)

Lot lines identify interior lots in parcels in subdivided areas and appear only on 100' and 50' maps (see Tract lines for 400' maps). Lot lines are symbolized as tic marks on the parcel map. However, lot lines will be captured as a solid line and symbolized in the digital file as a dashed line.

LOT NUMBER – LETTER TEXT (FIGURE 6)

Lot number – letter text is placed in the center of the lot and is parallel to the top and bottom map neatline and appears only on 100' and 50' maps. (See Tract Text for 400' maps)

MISCELLANEOUS TEXT (FIGURE 5)

Miscellaneous text is used anytime odd text appears on the parcel map itself, for example, “ASSESSED IN MAURY COUNTY”, “PT. 39”, “MINERAL BOUNDARY”, “AIRPORT”, and “LEVEE”.

NEAT LINE (FIGURE 5)

The neat line is a line separating the body of a map from the map margin.

PARCEL CONFLICT LINE (FIGURE 5)

Parcel conflict lines are disputed boundary lines that show deeded areas that are in conflict. Landhooks are placed across conflict lines to aid in the clarification of ownership. Conflict lines are displayed as a series of uniform dash lines.

Note: Conflict areas are not mapped consistently statewide and may present interpretation problems. In these instances, an Errata Note should be placed and the State will clarify.

PARCEL CONFLICT TEXT (FIGURE 5)

Parcel conflict text identifies the area in conflict. Text is placed inside of conflict areas parallel with conflict line.

PARCEL DIMENSIONS (FIGURE 6)

Parcel dimensions display the size (frontage and depth) of a parcel. Dimensions appear on all scale maps, and are placed above or below, and parallel to the parcel boundary line. Dimensions are more frequently found in subdivided and congested areas consisting of smaller parcels. Dimensions may be placed under the leadered parcel number if they cannot fit inside of the parcel. Dimensions placed under leadered parcel numbers have the form ‘123 X 456’.

PARCEL LINES (FIGURE 5)

Parcel lines are solid and are used to denote parcel polygon boundaries.

PARCEL NUMBER (FIGURE 5 AND FIGURE 7)

A parcel number is the actual parcel identifier. Parcel numbers should be underlined and placed parallel to the top and bottom map neat line. The underline is included in the text font. For a 400’ scale map, the parcel number is placed in the center of the parcel. On 100’ and 50’ scales map sheets, the number is placed in the upper right hand corner of the parcels.

PROPOSED RIGHT-OF-WAY (ROW) (FIGURE 5)

Proposed right-of-ways are road boundaries that are mapped on the source document by the state's mapping staff and are delineated by a solid red line.

PROPOSED RIGHT-OF-WAY TEXT

Proposed ROW text is not shown on the source parcel map. After capturing the proposed ROW the text “Proposed right-of-way” should be added to the digital data. Text should be placed inside and parallel to ROW lines. Text can be placed outside of ROW if annotation space is limited.

RIGHT-OF-WAYS (ROWS) (FIGURE 5)

There are two types of right-of-ways (ROW): road and railroad. When a railroad ROW intersects a road ROW, the railroad ROW is terminated and closed by the road ROW. Road ROWs do not have parcel

numbers but are assigned a region in the parcel coverage. Railroad ROWs, on the other hand, do have valid parcel numbers (usually in the 400 series, i.e., 401, 402, etc.) and are defined as a region with a code value of 677, not the parcel value of 604.

RIGHT-OF-WAY TEXT (FIGURE 5)

All road and railroad ROW text is placed inside the ROW parallel to the feature on 50' and 100' scale maps and outside the ROW parallel to the feature for 400' scale maps using the abbreviations (Hwy. St. and R.R.). Sound cartographic judgment should be used to determine placement of feature names if circumstances prevent the use of these guidelines.

RIVER-STREAM NAMES (FIGURE 5)

River-stream names are to be placed in italics at an angle with rivers or streams featured.

ROAD SYMBOLS (FIGURE 5)

Road symbols are used for 400', 100' and 50' scale maps. The four types of road symbols utilized will designate interstate, U.S., state and county highways. Road symbols will be placed inside the ROW on 100' and 50' map sheets and outside the ROW for 400' maps. Road symbols will consist of the symbol itself and the appropriate number as shown on the source parcel map. All symbols and numbers are placed parallel with the top and bottom map neat line.

SEE MAP NOTE (FIGURE 5)

These map notes are used to reference portions of a map, on all scales, that are parceled at a smaller or larger scale. (i.e. on a 400' map, SEE 1" = 100') Parcel lines and numbers are not shown in the reference area.

SPECIAL INTERESTS (CONDOMINIUM TEXT) (FIGURE 7)

Special Interest (Condominium Text) is a one, two or three-digit number placed in the center of a condominium footprint. The special interest numbers are not parcel numbers, i.e. 001, 002. Some condominiums may have individual parcel numbers and no special interest numbers. Special interest numbers should be placed parallel to the top and bottom map neatline. The parcel map is the source document for determining whether they are special interest or parcel numbers.

SPECIAL SCHOOL DISTRICT LINE (FIGURE 8)

Special school districts (SSD) are non-standard features and appear in limited counties. The special school district line will not form a parcel boundary. In most cases the SSD line is coincident with parcel boundaries and when this occurs both lines are captured. If the SSD line coincides with road or railroad ROW lines both lines will be captured. If the SSD line coincides with county and state lines only the administrative boundaries will be captured.

SPECIAL SCHOOL DISTRICT TEXT (FIGURE 8)

The special school district text is place inside of the SSD line and should not overstrike other lines and text. Text is always placed parallel with the line and is displayed least once per map. The parcel map is the primary source for this information.

STATE LINE (FIGURE 9)

The state line forms a parcel boundary. Only the state line is captured if a parcel line coincides with the state line, county line, and a road or a railroad that runs concurrently with the state line.

STATE NAME (FIGURE 9)

The state name (Tennessee) is to appear on the inside of the state boundary. It is placed parallel with the state line at least once per map without overstriking any other text. Adjoining state names appear on the outside of the state line.

SUBDIVISION BLOCK NUMBER-LETTER (FIGURE 6)

Subdivision block number/letters appear only on 100' and 50' maps and are placed as shown on the source parcel map. They are placed parallel to the top and the bottom of the map neatline and in the center of the subdivision block with a circle around the block number letter. These features should be placed so they do not overstrike parcel lines or other text.

SUBDIVISION NAME – SECTION NUMBER (FIGURE 6)

Subdivision names and section numbers are used as a reference to locate and identify parcels within a subdivided area. The subdivision name and section number is usually found in the center of the subdivision block on 100' and 50'scale maps. Text should be placed parallel with map Neat lines and should not overstrike parcel lines or other text.

SUBDIVISION PLAT BOOK AND PAGE NUMBER (FIGURE 6)

Subdivision plat book and page number is a reference for locating subdivision plats filed as a public record. The plat book and page number is placed under the subdivision name-section number and parallel to the map neat lines. The 100' and 50' parcel maps are the primary source for this information.

TRACT ACREAGE TEXT (FIGURE 5)

Tract acreage text appears only on 400' scale maps and is placed in the center of the tract and parallel with top and bottom map neatline. Tract acreage text is not found on all tracts of land.

TRACT NUMBER-LETTER TEXT (FIGURE 5)

Tract number-letter text appears only on 400' scale maps. Tract number-letter is placed in the upper right-hand corner of the tract and parallel to the top and bottom map neat line.

TRACT LINE (FIGURE 5)

Tract lines are used to denote interior tracts on 400' scale maps. These lines are referred to as lot lines on 100' and 50' maps. Tract lines are displayed as tic marks on the parcel map. Tract lines will be digitized as a solid line and symbolized in the digital file as a dashed line.

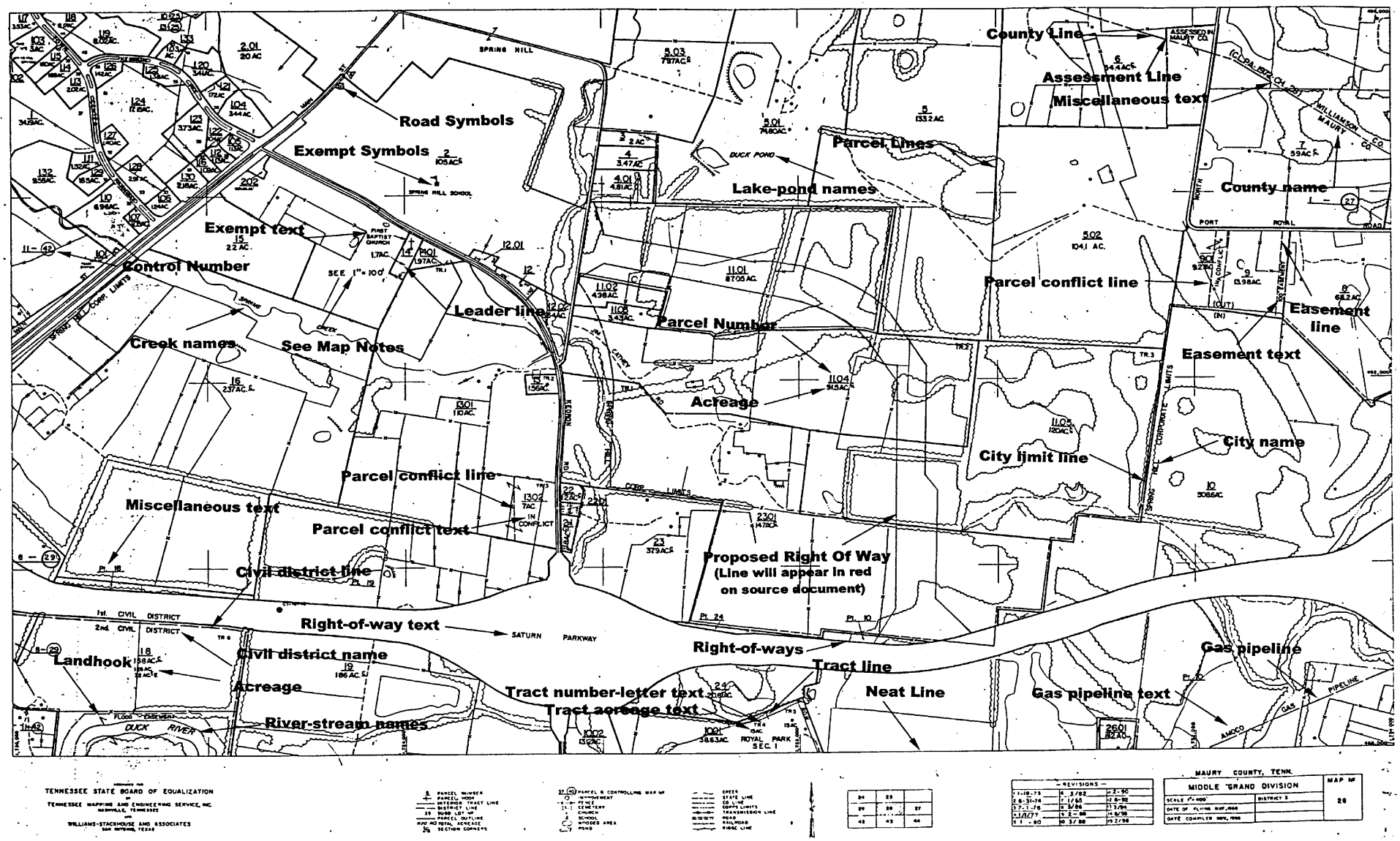


Figure 5: Cadastral Feature Definitions

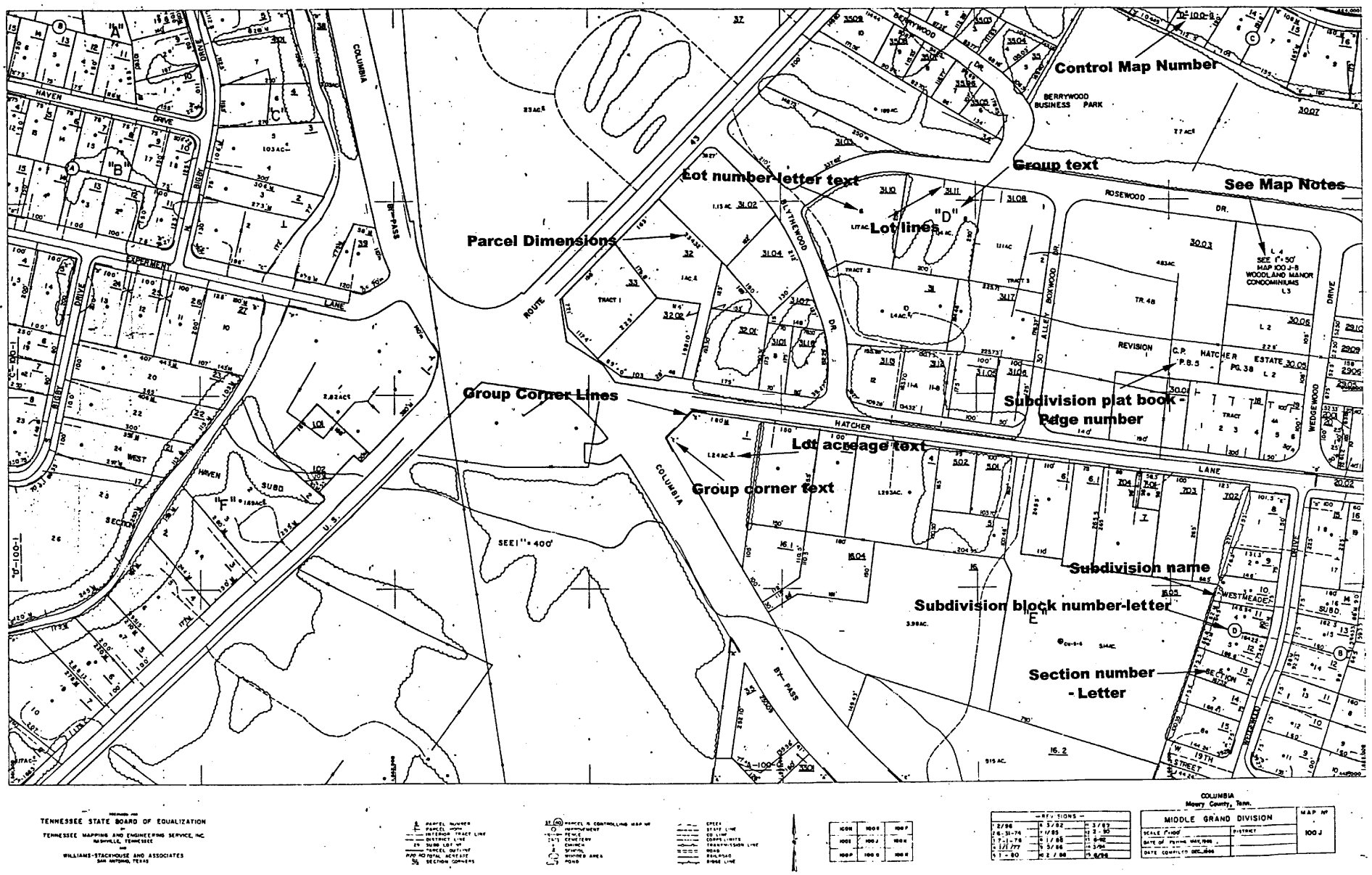


Figure 6: Cadastral Feature Definition(s)

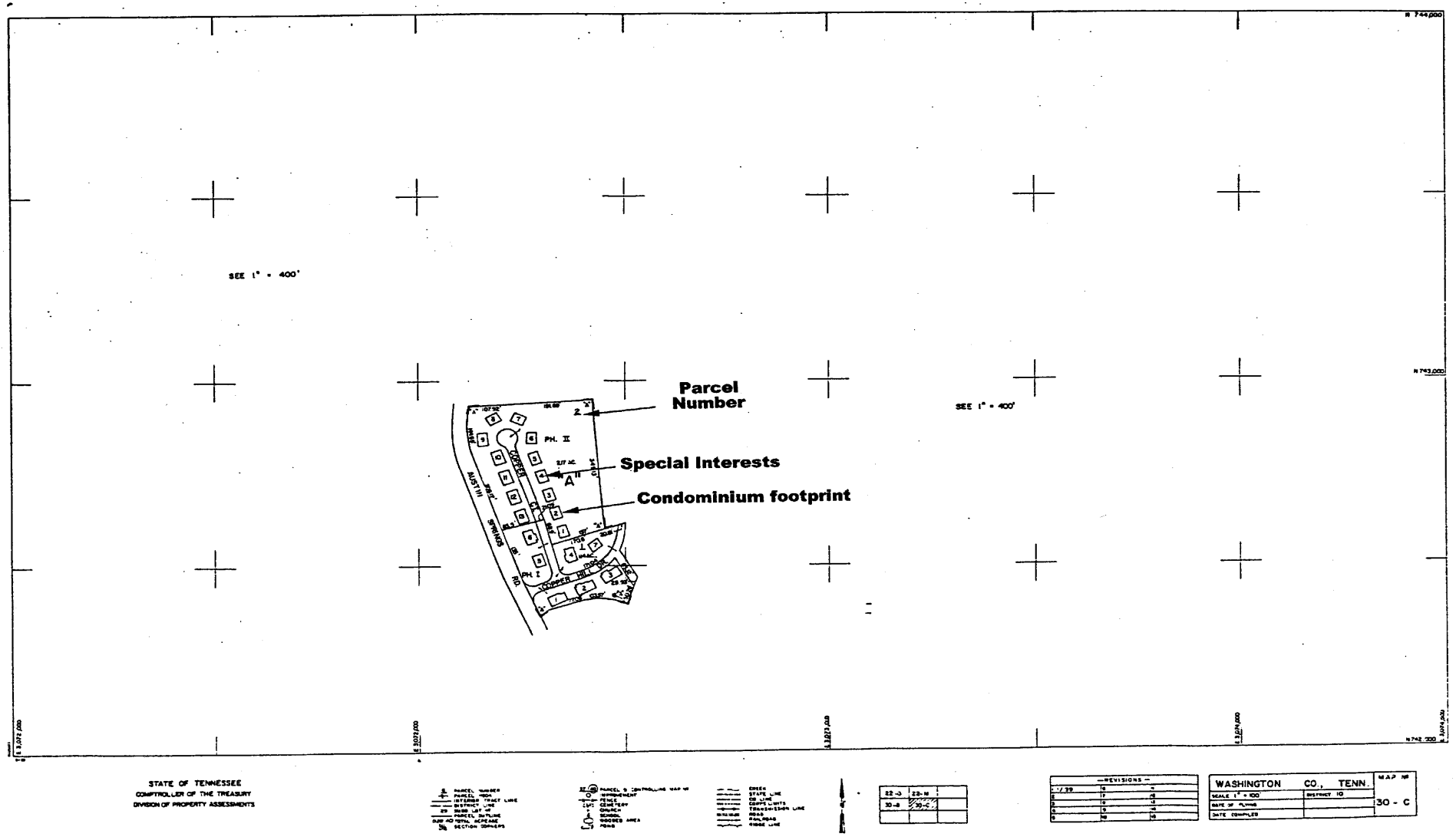


Figure 7: Cadastral Feature Definition(s)

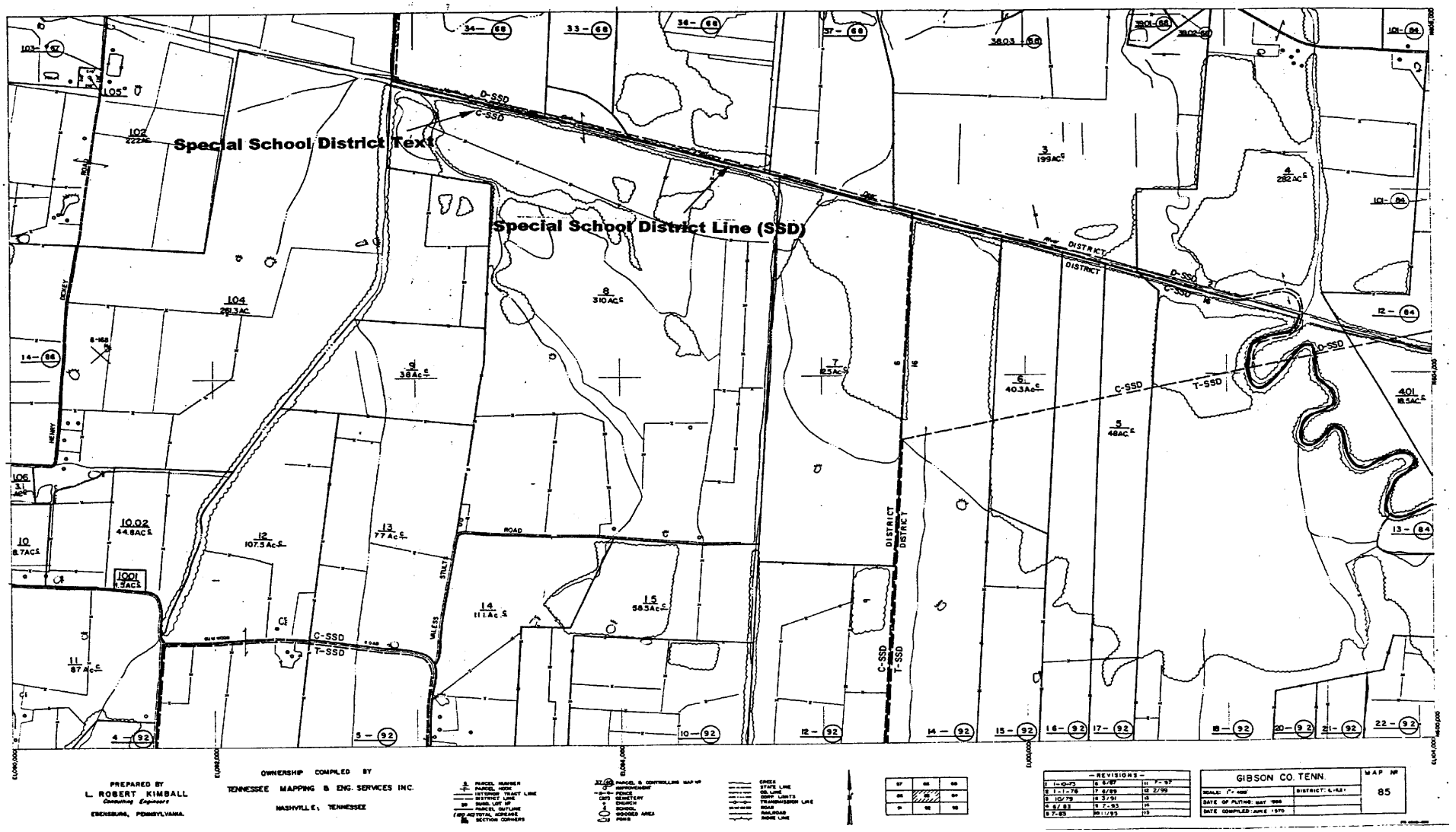


Figure 8: Cadastral Feature Definition(s)

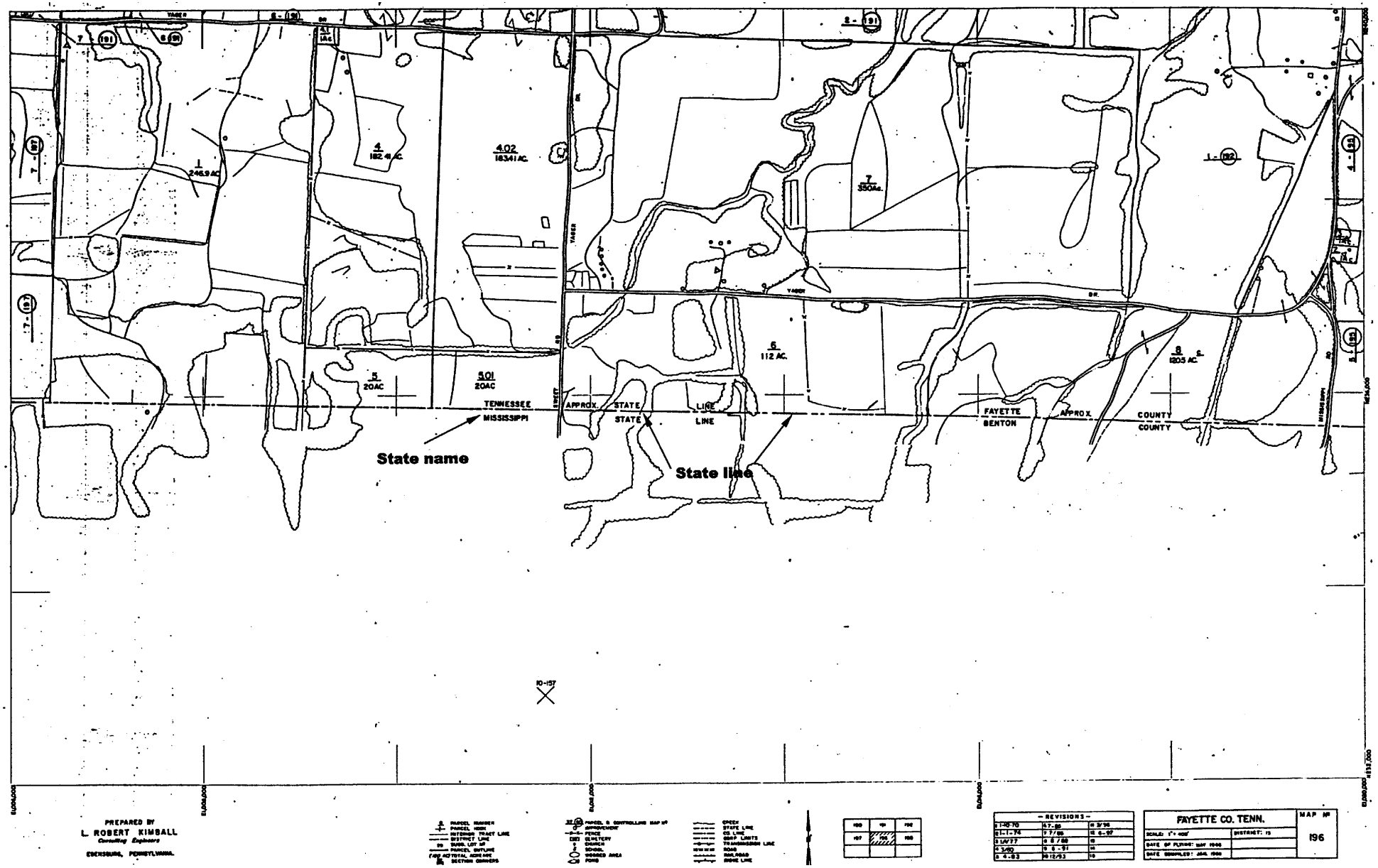


Figure 9: Cadastral Feature Definition(s)

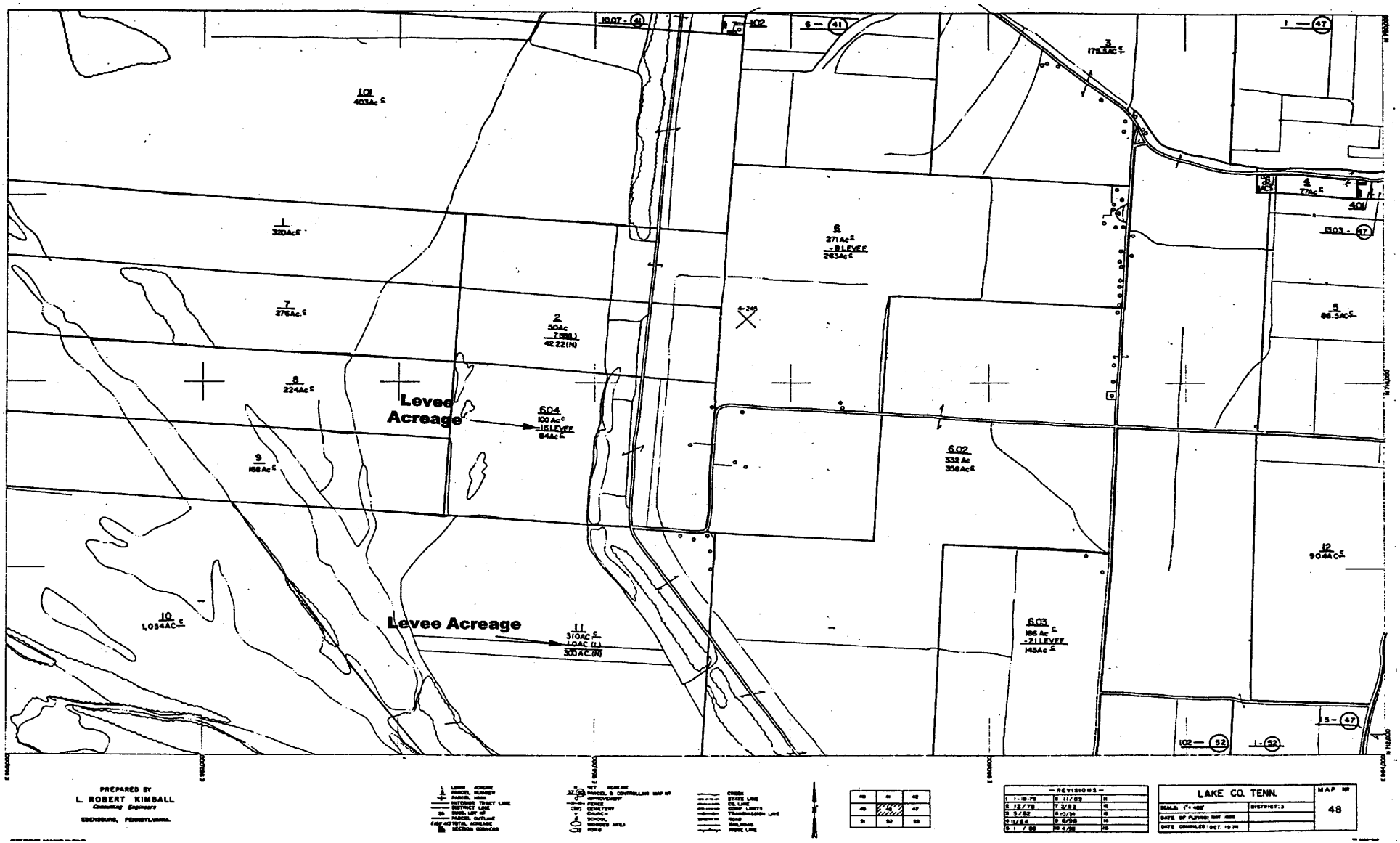


Figure 10: Cadastral Feature Definition(s)

6 DATABASE DESIGN SPECIFICATIONS

Introduction

This section contains the Arc/Info database design for the State of Tennessee parcel level Geographic Information System. The database design presented here is applicable to all county parcel data sets included in the State parcel level GIS. Several counties in the State have developed parcel databases prior to the implementation of these specifications. It is anticipated that most of these will retain their specification. Their parcel databases will be converted to these specifications if they should be integrated into the State parcel level GIS.

All vector data will be delivered in files that cover one 1"=400' map sheet and have the following characteristics:

Coordinate precision:	Double
Map units:	feet
Coordinate system:	Tennessee State Plane NAD83(90)
FIPS Zone:	4100
Fuzzy tolerance:	0.01
Dangle tolerance:	0.0
Map plotting scales:	1" = 50', 1" = 100' and 1" = 400'
Tics:	Placed coincident with tile (map sheet) neatline corners.
Tile Size:	14000 x 8000 feet

The default for numeric values will be zero (0).

The default for character attributes will be "" or NULL.

Map Librarian

Arc/Info Map Librarian will be used to manage the database. The INDEX used for the tiling scheme will be created from the existing 400' map sheet index used in the manual mapping system. The standard dimension of an existing manual 400' map sheet is 14,000' by 8,000'. The index will have both polygon and arc topology, and contain the items necessary for Arc Info Library management, including items TILE_NAME and LOCATION, PARCEL, PARCELLK, and all other data layers specified during the creation of the Map Library. This index will be named INDEX and will reside in the DATABASE directory. The sole purpose of this index coverage is to partition Arc/Info Library data by tile. Each arc in the INDEX coverage will be given a code value of 0 (zero). Likewise, each polygon in the INDEX coverage will be given a code of 0 (zero). For some additional layers, these code 0 (zero) default values are also used to define tile boundary arcs, and polygons outside the county.

Empty coverages shall be created and delivered per the specifications in this section when there are no features found in a 400' scale mapsheet.

On the extreme fringe areas of a county, a 400' map sheet was not created in order to avoid the need for a full 400' map sheet that contained only a small portion of a county. These areas typically are contained as an inset on an adjoining 400' map sheet. In the conversion to a digital parcel mapping system, these omitted map sheets will be created as 400' map sheets in the spatial index used in Map Librarian. They will be created on an as-needed basis.

All data is delivered in a 400' map sheet file unit. The 100' and 50' county index is used for administrative and plotting purposes only.

Tile Naming

Data is to be tiled into areas corresponding to 400' scale map sheets. These sheets will have a five-character name. The first two characters represent the county number followed by the three-character map number. For example, map 112 for Maury County would be named 60112.

In Arc/Info, these blocks of data correspond to workspace directories. Each coverage outlined in the database design (e.g. parcel, plan, etc.) will reside in these workspaces.

Annotation

Annotation shall be captured for all coverages and placed in an annotation subclass. Each annotation subclass contains specific names, levels, symbols, and sizes. Empty annotation subclasses shall be created and delivered per the specifications in this section when there are no annotation features found in a 400' scale mapsheet.

All annotation text must be placed as indicated in the Cadastral Feature Definitions (Refer to Section 5).

The following are guidelines for the placement of annotation:

- To obscure the minimum amount of other features
- Along (and splined to follow) linear features
- Beside/above/under point features reading from west to east as appropriate
- To occur at least once on each map sheet for which the map feature appears
- To be correct as regards to grammar and spelling and to be in uppercase only

Text heights used in the coverages will conform to the specifications presented in the Database Layers Section. These have been developed from the Tennessee State Specifications for Property Ownership Mapping.

In certain circumstances text size may be modified as follows:

1. If the text will not fit in the appropriate position without overlapping other features, reduce the size to 75% of the specified size.

2. If the text will still not fit in the appropriate position without overlapping other features, reduce the size to 50% of the specified size.

3. If the text will still not fit in the appropriate position without overlapping other features, place the text in an open area as close as possible at the original specified size and use a leader line to associate the text to the mapped feature.

Note: Leader lines will be captured as a separate feature, an ArcInfo arrow, in the appropriate annotation subclass for the text it refers to.

Cadastral Edge-matching

All Arc/Info coverages must be completely edge-matched by coordinates and by attributes. All database features must be both visual and coordinate edge-matched with adjacent sheets. No edge-matching tolerance will be allowed. Attributes for adjoining features will be identical. Any edge-matching errors found on the source documents will be brought to the attention of the State for correction. Incremental delivery units will edge-match with previously delivered units.

Inclusion of Planimetric Features

Ridgelines and hydrographic features can form property boundaries and are shown on the parcel maps with a distinctive symbology. When this occurs, the feature defining the property boundary will be copied from the digital planimetric data and changed to a property line for the parcel coverage. These property lines will be coincident with the corresponding water and ridgeline features. In some instances, such as hydrography captured during extremely high or low water levels, line work will be captured from the parcel map sources.

Metadata

Consistent metadata is a critical component for documenting, evaluating, and distributing spatial data of all forms. Metadata conveys information users need to evaluate the fitness for applying a dataset for their needs. In its machine-readable format, it is searched and queried within an intranet or network-based Clearinghouse. Metadata further serves an important role in documenting the lineage and processing history of a dataset as it flows through the data life cycle.

Requirements

The State will compile FGDC-compliant metadata for each discrete unit (orthoimage, digital terrain model, planimetric and parcel coverage) on delivery of final digital data products. Detailed supporting data to facilitate this process will be provided by the vendor to the State with the final digital data delivery.

Supporting data for each discrete unit will include the file name, the size of the digital file in bytes, the coordinates of the southeast corner of the dataset in decimal degrees, and the date of the final digital data delivery. For orthoimagery products, additional supporting data for each discrete unit will include the photo acquisition date, the roll number, and the frame number.

Database Layers

Administrative Boundaries

Coverage Name: ***ADMIN***
Feature Class(es): Lines and Polygons
Description: Administrative Boundaries

		Item Name	Definition	Value(s)	Description
Polygons:	**PAT**	CODE	2,4,B,0	108	City
				112	County
		NAME	40,40,C	-	City or County name
Line:	**AAT**	CODE	2,4,B,0	101	State line
				105	City limit line
				109	County line

	Subclass	Level	Symbol	Size	Description
Annotation:	Stat	5	102	8.5	State Name (50)
	Stat	1	102	17.5	State Name (100)
	Stat	4	103	70	State Name (400)
	City	5	106	7	City Name (50)
	City	1	106	14	City Name (100)
	City	4	107	48	City Name (400)
	Cnty	5	110	8.5	County Name (50)
	Cnty	1	110	17.5	County Name (100)
	Cnty	4	111	70	County Name (400)

Notes:

1. When city and county lines are coincident, only the county line is captured. One arc, coded as county, will represent both city and county lines.
2. All polygon features that intersect with the tile boundary are closed using the tile boundary. The arc segment representing the tile boundary will have a code value of **0**.
3. The text found adjacent to or near the city name labeled “(In) (Out)” indicate if the parcels are inside or outside the city limits. This text should be captured and placed in the City annotation subclass.

Civil District Boundaries

Coverage Name: ***CIVDIST***
Feature Class(es): Lines
Description: Civil District Boundaries

		Item Name	Definition	Value(s)	Description
Line:	**AAT**	CODE	2,4,B,0	145	Civil District line

	Subclass	Level	Symbol	Size	Description
Annotation:	Civil	5	146	7	Civil District name (50)
	Civil	1	146	14	Civil District name (100)
	Civil	4	147	56	Civil District name (400)

Notes:

1. The **CIVDIST** layer is captured for historical reference only. All annotation and arc features included are as they appear on the source document at the time of conversion to this specification.
2. The State will create a file containing a list of all 400' map sheets and their corresponding district numbers. This file is used to populate the district section in the legend during map production.

Special District Boundaries

Coverage Name: ***SPECDIST***
Feature Class(es): Lines and Polys
Description: Special District Boundaries

		Item Name	Definition	Value(s)	Description
Polygons:	**PAT**	CODE	2,4,B,0	155	School District
		NAME	40,40,C	-	School District name
Line:	**AAT**	CODE	2,4,B,0	155	School District line

	Subclass	Level	Symbol	Size	Description
Annotation:	Spec	5	148	7	School District name (50)
	Spec	1	148	14	School District name (100)
	Spec	4	149	56	School District name (400)

Notes:

1. The feature Special School Districts is used in only 7 counties: Carroll, Gibson, Henry, Obion, Scott, Williamson, and Wilson.
2. All polygon features that intersect with the tile boundary are closed using the tile boundary. The arc segment representing the tile boundary will have a code value of **0**.

Hydrographic Features - Creeks

Coverage Name: ***HYDROL***
Feature Class(es): Lines
Description: Hydrographic Features

		Item Name	Definition	Value(s)	Description
Line:	**AAT**	CODE	2,4,B,0	724	Creek
				727	Hidden Creek

	Subclass	Level	Symbol	Size	Description
Annotation:	Crek	5	725	6	Creek Name (50)
	Crek	1	725	12	Creek Name (100)
	Crek	4	726	48	Creek Name (400)

Hydrographic Features – Lakes/Rivers

Coverage Name: ***HYDROP***
Feature Class(es): Polygons
Description: Hydrographic Features

		Item Name	Definition	Value(s)	Description
Polygons:	**PAT**	CODE	2,4,B,0	717	Lake/Pond
				722	River/Stream
				764	Island
Line:	**AAT**	CODE	2,4,B,0	714	Lake/Pond
				718	Hidden Lake/Pond
				719	River/Stream
				723	Hidden River/Stream
				763	Borderline at confluence

	Subclass	Level	Symbol	Size	Description
Annotation:	Lake	5	715	8.75	Lake/Pond (50)
	Lake	1	715	17.5	Lake/Pond (100)
	Lake	4	716	70	Lake/Pond (400)
	Rivr	5	720	8.75	River (50)
	Rivr	1	720	17.5	River (100)
	Rivr	4	721	70	River (400)

Notes:

1. All polygon hydro features that intersect with the tile boundary are closed using the tile boundary. The arc segment representing the tile boundary will have a code value of **0**.
2. Borderline at confluence (**PAT** code **763**) is placed logically to delineate different bodies of water as indicated by a change of name on the source document.

Parcel and Right of Ways

Coverage Name: ***PARCEL***
Feature Class(es): Lines and Regions
Description: Parcels and Right-of-ways

		Item Name	Definition	Value(s)	Description
Region:	**PATPARC**	CODE	2,4,B,0	604	Parcel
				605	Common Area
				673	Street R.O.W.
				677	Railroad R.O.W.
				678	Parcel in conflict
				679	Condominium
				717	Lake/Pond
				722	River
				998	Unknown
		GISLINK	15,15,C	-	Parcel Number
		GISLINK2	15,15,C	-	Secondary Parcel Number
		CALC_ACRE	4,10,F,2	-	Calculated Acreage
		MAP	5,5,C	-	Physical Map No. (**see notes below**)
	Redefined:	COUNTY	3,3,C	-	County Number (col. 27)
	Redefined:	CNTLMAP	3,3,C	-	Control Map Number (col. 30)
	Redefined:	MAP_LTR	2,2,C	-	Map Insert Letter (col. 33)
	Redefined:	GROUP	2,2,C	-	Group Number (col. 35)
	Redefined:	PARCEL	5,5,C	-	Parcel Number (col. 37)
Line:	**AAT**	CODE	2,4,B,0	601	Parcel line
				662	Street R.O.W. line
				674	Railroad R.O.W. line
				101	State line
				109	County line
				651	Parcel conflict line
				714	Lake/Pond
				719	River
		* ANGLE	10,10,C	-	
		* DISTANCE	8,8,C	-	
		* RADIUS	8,8,C	-	
		* DELTA	10,10,C	-	
		* TANGENT	8,8,C	-	
		* ARCLENGTH	8,8,C	-	
		* SIDE	1,1,C	-	
		* CURVE_FLAG	1,1,C	-	

Notes:

1. COGO attributes (denoted with an *) are populated in post conversion but prior to delivery and will be used only for on-going maintenance.
2. **PAT** code **998 – Unknown** is used only where a GISLINK cannot be determined based upon the available source document.
3. **GISLINK** field – Reference Cadastral Feature Definitions, **GISLINK** for additional information.
4. Road ROWs do not have parcel numbers and are given a code value **673** in the **PATPARC**.

5. Railroad ROWs have valid parcel numbers (usually in the 400 series, ie: **401**, **402**, **403**, etc.) and are given a code value of **677**. These railroad ROW parcels are included in the **PATPARC** region subclass.
6. Polygons falling within a 400' index map sheet, but outside of the county and/or parcel, will not be defined as regions.
7. The **GISLINK2** field is reserved for counties that participate in the county wide or 50' scale repining process. It is populated with the old Parcel Number while the **GISLINK** field contains the Parcel Number resulting from repining. The **GISLINK2** field is left blank for those counties who do not need repining.
8. The **MAP** field is reserved for counties that require repining; either county wide or 50' scale repining. The physical map number that contains the **new** parcel annotation is populated in this field and is left blank for those counties who do not need repining.
9. All polygon parcel features that intersect with the tile boundary are closed using the tile boundary. The arc segment representing the tile boundary will have a code value of **0**.
10. Common areas may or may not have a parcel number assigned to it. When no parcel number is found, these areas should be coded as "common area" with no **GISLINK** value. If a parcel number does exist, these areas should be coded as "parcel" and assigned an appropriate **GISLINK** value.
11. ROW Text: Street/Highway Name names will be captured from the source document that correspond to a road right-of-way or a street centerline (symbolized with a single dashed line on the source document) and placed in the **Srow** anno subclass.

Coverage Name: ***PARCEL*** (Cont.)
Feature Class(es): Lines and Regions
Description: Parcels and Right-of-ways

	Subclass	Level	Symbol	Size	Description
Annotation:	Parc	5	602	10.5	Parcel Number (50)
	Parc	1	602	21	Parcel Number (100)
	Parc	4	603	105	Parcel Number (400)
	Srow	5	663	7	ROW Text: Street/Highway Name (50)
	Srow	1	663	14	ROW Text: Street/Highway Name (100)
	Srow	4	664	48	ROW Text: Street/Highway Name (400)
	Rrow	5	675	7	ROW Text: Railroad Name (50)
	Rrow	1	675	14	ROW Text: Railroad Name (100)
	Rrow	4	676	48	ROW Text: Railroad Name (400)
	Dime	5	627	5	Parcel Dimension (50)
	Dime	1	627	10	Parcel Dimension (100)
	Dime	4	628	22.5	Parcel Dimension (400)
	Acre	5	629	5	Acreage (50)
	Acre	1	629	10	Acreage (100)
	Acre	4	630	56	Acreage (400)

Other Parcel Features

Coverage Name: ***PARCELLK***
Feature Class(es): Lines and Points
Description: Other Parcel line and Point Features

		Item Name	Definition	Value(s)	Description
Points:	**XAT**	CODE	2,4,B,0	656	Exempt Symbol: Church (100)
				657	Exempt Symbol: Church (400)
				658	Exempt Symbol: Cemetery (100)
				659	Exempt Symbol: Cemetery (400)
				660	Exempt Symbol: School (100)
				661	Exempt Symbol: School (400)
				665	Road Symbol: Interstate Highway (100)
				666	Road Symbol: Interstate Highway (400)
				667	Road Symbol: US Highway (100)
				668	Road Symbol: US Highway (400)
				669	Road Symbol: State Highway (100)
				670	Road Symbol: State Highway (400)
				689	Sub. Block Circle (100)
				690	Road Symbol: County Highway (100)
				692	Road Symbol: County Highway (400)
				693	Sub. Block Circle (400)
				699	Exempt Symbol: Church (50)
				700	Exempt Symbol: Cemetery (50)
				701	Exempt Symbol: School (50)
				702	Road Symbol: Interstate Highway (50)
				703	Road Symbol: US Highway (50)
				704	Road Symbol: State Highway (50)
				705	Sub. Block Circle (50)
				706	Road Symbol: County Highway (50)
Line:	**AAT**	CODE	2,4,B,0	607	Easement line
				621	Lot line/Tract line
				622	Proposed R.O.W.
				625	Group Corner Line
				637	Land Hook (50/100)
				638	Land Hook (400)
				646	Parcel Control Circle (400)
				673	Condo Footprint
				681	Gas Pipe Line

Notes:

1. The Sub. Block Circle features are captured as points and symbolized as circles.
2. Land hook measurements for each half:
   400' Land Hook: line length = 145, hook angle = 45 deg., hook length = 40
   100' Land Hook: line length = 60, hook angle = 45 deg., hook length = 20
   50' Land Hook: line length = 40, hook angle = 45 deg., hook length = 10

Coverage Name: ***PARCELLK*** (Cont.)
Feature Class(es): Lines and Points
Description: Other Parcel line and Point Features

	Subclass	Level	Symbol	Size	Description
Annotation:	Inter	5	604	5	Special Interest Text – Condominium (50)
	Inter	1	604	10	Special Interest Text – Condominium (100)
	Inter	4	610	40	Special Interest text – Condominium (400)
	Esmt	5	608	5	Easement Text (50)
	Esmt	1	608	10	Easement Text (100)
	Esmt	4	609	40	Easement Text (400)
	Snam	5	614	7	Subdivision Name, Plat Book/Page (50)
	Snam	1	614	14	Subdivision Name, Plat Book/Page (100)
	Snam	4	615	48	Subdivision Name, Plat Book/Page(400)
	Blck	5	620	7	Subdivision Block Number (50)
	Blck	1	620	14	Subdivision Block Number (100)
	Blck	4	620	28	Subdivision Block Number (400)
	Lotrt	5	623	6	Lot Number/letter text (50)
	Lotrt	1	623	12	Lot Number/letter text (100)
	Lotrt	4	624	40	Tract line text (400)
	Grpc	5	626	5	Group Corner text (50)
	Grpc	1	626	10	Group Corner text (100)
	Grpc	5	626	14.5	Group text (50)
	Grpc	1	626	29	Group text (100)
	Misc	5	635	5	Miscellaneous text (50)
	Misc	1	635	10	Miscellaneous text (100)
	Misc	4	636	40	Miscellaneous text (400)
	Erra	9	643	10/20/40	Erratta text
	Exem	5	683	5	Exempt text (50)
	Exem	1	683	10	Exempt text (100)
	Exem	4	684	40	Exempt text (400)
	Cntl	5	647	10.5	Parcel/Control Number (50)
	Cntl	1	647	21	Parcel/Control Number (100)
	Cntl	4	648	84	Parcel/Control Number (400)
	Lacre	5	649	5	Lot Acreage text (50)
	Lacre	1	649	10	Lot Acreage text (100)
	Lacre	4	650	28	Tract Acreage text (400)
	Conf	5	652	6	Parcel Conflict line text (50)
	Conf	1	652	12	Parcel Conflict line text (100)
	Conf	4	653	48	Parcel Conflict line text (400)
	Gasl	5	679	6	Gas Pipe line text (50)
	Gasl	1	679	12	Gas Pipe line text (100)
	Gasl	4	680	48	Gas Pipe line text (400)
	Note	5	681	7	"See Map" note (50)
	Note	1	681	14	“See Map” note (100)
	Note	4	682	48	"See Map" note (400)
	ProROW	5	685	7	Proposed ROW text (50)
	ProROW	1	685	14	Proposed ROW text (100)
	ProROW	4	686	48	Proposed ROW text (400)

Edge of Pavements

Coverage Name: ***EOP***
Feature Class(es): Lines and Polygons
Description: Edge of Pavements (100' scale only)

		Item Name	Definition	Value(s)	Description
Polygons:	**PAT**	CODE	2,4,B,0	707	Paved Road
				709	Background
Line:	**AAT**	CODE	2,4,B,0	707	Road Edge
				710	Hidden Road Edge

Notes:

1. Paved Road **(707)** polygon features that intersect with the tile boundary are closed using the tile boundary. The arc segment representing the tile boundary will have a code value of **0**.
2. Background **(709)** polygons are formed when an area is completely surrounded by arcs representing either Road Edges **(707)** or Hidden Road Edges **(710)**. The neatline will never be used as an artificial closing arc for Background **(709)** polygons.

Ridgelines

Coverage Name: ***RIDGE***
Feature Class(es): Lines
Description: Ridgelines required for parcel mapping

		Item Name	Definition	Value(s)	Description
Line:	**AAT**	CODE	2,4,B,0	757	Ridgelines

Notes:

1. Ridgelines (**757**) are extracted from the Digital Terrain Model (DTM) as needed and indicated on the original source document. They are copied coincident from the DTM file to both the **PARCEL** layer where they are to be coded as a parcel line (**604**) and to the **RIDGE** layer where they are coded as a ridgeline (**757**).

Street Centerlines

Coverage Name: ***STREETS***
Feature Class(es): Lines
Description: Street Centerlines

		Item Name	Definition	Value(s)	Description
Line:	**AAT**	CODE	2,4,B,0	901	Street Centerline
				903	Hidden Street Centerline
				904	Driveway Centerline
				905	Hidden Driveway Centerline

Tree-Covered Areas

Coverage Name: ***TREE***
Feature Class(es): Lines and Polygons
Description: Tree Covered Areas

		Item Name	Definition	Value(s)	Description
Line:	**AAT**	CODE	2,4,B,0	501	Vegetated area
Poly:	**PAT**	CODE	2,4,B,0	501	Vegetated area (400' scale only, >10 acres)
				510	Non-vegetated area

Notes:

1. All polygon features that intersect with the tile boundary are closed using the tile boundary. The arc segment representing the tile boundary will have a code value of 0.
2. Non-vegetated area **(510)** polygons are formed when an area is completely surrounded by arcs representing vegetated areas **(501)**. The neatline will never be used as an artificial closing arc for Non-vegetated area **(510)** polygons.

Other Countywide Coverages

400’ Scale Mapping Index

Coverage Name: ***INDEX400***
Feature Class(es): Polygons
Description: 1"=400' Mapping Grid

		Item Name	Definition	Value(s)	Description
Poly:	**PAT**	TILE_NAME	5,5,C	-	Tile Name
		MAP_NUMBER	3,3,C		400’ Map Number

	Subclass	Level	Symbol	Size	Description
Annotation:	Nam	1	1	2500	400’ Map Number

Notes:

1. **INDEX400** polygons will cover the same spatial extent as the Librarian coverage **INDEX**, including fringe areas of the county where 400’ map sheets previously did not exists.
2. **TILE_NAME** values will include the county number and 400’ map sheet with leading zeros (maps 1-99) but will not include an underscore (i.e.64023). (**TILE_NAME** attributes must reflect folder names contained in “Tiles” subdirectory in final delivery)
3. Annotation (subclass Nam) will not include the county number, or leading zeros but only the 400’ map number (i.e. 23).
4. Attributes for **MAP_NUMBER** will not have leading zeros for maps 1-99.

100’ Scale Mapping Index

Coverage Name: ***INDEX100***
Feature Class(es): Polygons
Description: 1"=100' Mapping Grid

		Item Name	Definition	Value(s)	Description
Poly:	**PAT**	TILE_NAME	6,6,C	-	Tile Name
		MAP_NUMBER	4,4,C		400’ Map Number and 100’ letter
		CODE	2,4,B,0	0	100’ property map not active
				1	100’ property map is active
		ORTHOCODE	2,4,B,0	0	No ortho present
				1	Ortho present

	Subclass	Level	Symbol	Size	Description
Annotation:	Nam	1	1	700	100’ Map Letter

Notes:

1. **INDEX100** polygons will cover the entire extent of the county such that each **INDEX400** polygon will contain sixteen **INDEX100** polygons.
2. Only those **INDEX100** polygons with a code of 1 (in use) will receive annotation. An **INDEX100** polygon will be determined to be in use when a 100’ parcel map sheet has been created for that polygon.
3. **TILE_NAME** values will include the county number, 400’ map sheet and 100’ map letter (i.e. 64023A) with no underscore.
4. Annotation (Subclass **Nam**) will not include the county number, underscore, or 400’ map numbers, but only the 100’ map letter (i.e. A)
5. **MAP_NUMBER** values will include the 400’ map numbers and 100’ map letter (i.e. 23A) and not contain leading zeros for maps 1-99.
6. **CODE** items will only appear in the PAT and should not be placed in the AAT.
7. **ORTHOCODE** is used to indicate which 100’ index polygons have a corresponding orthophoto. In many cases this value will match the **CODE** value, but there may be instances where the State and/or county will request orthophoto production without having a corresponding 100’ property map. Conversely, there may also be instances where a 100’ property map exists but does not have a corresponding orthophoto. This difference usually occurs when the county property assessor creates new 100’ maps prior to the start of parcel conversion but after tasking for aerial photography.

50’ Scale Mapping Index

Coverage Name: ***INDEX50***
Feature Class(es): Polygon
Description: 1"=50' Mapping Grid

		Item Name	Definition	Value(s)	Description
Poly:	**PAT**	TILE_NAME	7,7,C	-	Tile Name
		MAP_NUMBER	5,5,C		400’ Map Number with 100’ and 50’ letters

	Subclass	Level	Symbol	Size	Description
Annotation:	Nam	1	1	200	50’ Map Letter

Notes:

1. **INDEX50** polygons will exist only where 50’ maps have been created prior to conversion.
2. **TILE_NAME** values will include the county number, 400’ map sheet, 100’ map letter, and 50’ map letter (i.e. 64023AB) with no underscore.
3. Annotation (Subclass **Nam**) will not include the county number, underscore, 400’ map numbers, or 100’ map letter, but only the 50’ map letter (i.e. B)
4. For counties that are eliminating the existing 50’ map sheets and incorporating them into the 100’ map sheets, no **INDEX50** coverage is required.

Photography Index

Coverage Name: ***PHONDX***
Feature Class(es): Points
Description: Photo Center Index

		Item Name	Definition	Value(s)	Description
Point:	**XAT**	CODE	2,4,B,0	401	High Altitude
				402	Low Altitude
		EXP	12,12,C	-	Exposure Number
		ACQ	8,8,C	-	Date Acquired
		LINE_NO	3,3,C	-	Flight Line Identifier
		COUNTER_NO	4,6,B	-	Camera Counter Number
		ROLL_NO	10,10,C	-	Film Roll Number

Notes:

1. The Date Acquired format for the **ACQ** field will be YYYYMMDD.

Digital Terrain Model (DTM)

The file format for DTMs is MicroStation Version SE (DGN). This file format uses a series of attributes defining values for Level, Color, Line Style, and Weight to identify features contained in a file. Using specific values assigned to each of these four attributes, the features contained in each DTM can be uniquely identified. Features included in the DTMs are discussed in Section 6 above. The following table identifies all of the unique attribute values for all potential features contained in the DTM:

Unlike the Arc/Info layers described in the previous sections, Librarian is not used to manage the DTM files. A DTM file is provided for each digital ortho image at both 100' scale and 400' scale. However, each DTM used to create a 100' scale ortho image shall also be included in the parent 400' scale DTM.

FEATURE DESCRIPTION	LEVEL	COLOR	LINE STYLE	WEIGHT
FALSE MASS POINTS	4	6	0	4
MASS POINTS	5	2	0	4
WATER MASS POINTS	6	1	0	4
BREAKLINES	7	3	0	1
BREAKLINES *	7	10	0	1
BREAKLINES ON BRIDGE DECK (IN 400-SCALE AREAS) *	8	10	3	1
BREAKLINE (RR CENTERLINE)	11	6	1	2
BREAKLINE (RR CENTERLINE) *	11	6	0	1
BREAKLINE (RR CENTERLINE ON BRIDGE DECK)	10	6	3	1
ROAD CENTERLINE	15	0	3	1
ROAD CENTERLINE *	15	0	0	1
ROAD CENTERLINE ON BRIDGE DECK	18	0	3	1
DRIVE CENTERLINE (OVER 200')	19	3	2	1
DRIVE CENTERLINE (OVER 200') *	19	3	0	1
DRIVE CENTERLINE ON BRIDGE DECK	20	3	3	1
CREEK (UNDER 25')	29	7	6	1
CREEK (UNDER 25') *	29	7	0	1
RIVERS (OVER 25')	28	7	6	1
RIVERS (OVER 25') *	28	12	0	1
LAKE/POND (OVER 25')	27	1	7	1
LAKE/POND (OVER 25') *	27	1	0	1
Additional Features in 100' DTM only:				
EOP IMPROVED ROAD ON BRIDGE DECK *	17	4	3	1
EOP IMPROVED ROAD	16	4	3	1
EOP IMPROVED ROAD *	16	4	0	1

Note: WORKING UNITS = 1000/1 SF/TH

GLOBAL ORIGIN = 0,0,0

NOTES:

1. False Mass Points are a derived point of elevation based on the average elevation surrounding a building feature that is of significant size. The area of a building is considered depending on Map Sheet scale. For 100' scale map sheets, any structures larger than 300' x 300' (90,000 square feet or approximately 2 acres) will require the addition of a False Mass Point. For 400' scale map sheets, any structures larger than 900' x 900' (810,000 square feet or approximately 18.5 acres will require the addition of a False Mass Point.
2. The level, color, line style, and weight values for the features denoted above with an * have been altered to better improve internal quality review of the DTMs. Those marked with an * were implemented in Year 3 and all future production efforts.
3. The file naming convention for DTMs shall follow the system detailed for digital ortho images:
    a. For 400' scale = 2 digit county code, 3 digit map sheet and the DGN extension
    b. For 100' scale = 2 digit county code, 3 digit map sheet, 1 digit alpha inset, and the DGN extension.

7 SUMMARY OF PRODUCTS

The following list represents a summary of the products that the State is acquiring for each county from this project. Specific details of each item can be found in the appropriate section(s) of this document.

1. USGS camera calibration report
2. Flight Index
3. GPS/IMU integration report (if required)
4. Original film
5. Analytical diapositives (if required)
6. Scanned diapositives (if required)
7. GCP layout, ASCII control file, and final control report
8. Aerotriangulation report (if required)
9. DTM data files
10. Digital ortho imagery in GeoTIFF format
11. Digital ortho imagery in compressed, multiresolution seamless image in MrSID format
12. Hard copy ortho image plots
13. Vector data sets as described in the database design
14. Supporting digital data for metadata compilation

8 GLOSSARY OF TERMS

The following is a list of definitions that were compiled during the initial development of this specification document. The list has been sporadically maintained during that time and should not be considered the final authority for a specific item or entry. Periodically from time to time this list of definitions will be updated. It is included here to assist the reader who may be unfamiliar with terms used in this document.

Aerotriangulation - A process for the extension of horizontal and/or vertical control whereby the measurements on overlapping photographs are related into a spatial solution using the perspective principles of the photographs. This process results in the determination of the orientation elements of each photograph.

Airborne GPS - The use of GPS to determine the camera station positions within centimeters, thereby reduces the dependency on field surveying in photogrammetric mapping.

ASPRS – The American Society for Photogrammetry and Remote Sensing.

DTM - Digital Terrain Model. Elevations points and break lines collected for the purpose of modeling the terrain surface. This surface can be used to correct for elevation differences in creating an orthophotograph. Manual correlation involves an operator selecting points and measuring their elevations, whereas autocorrelation involves computer selection and measurement. Either may be used to collect a DTM. As used in this document the term DTM is synonymous with **DEM - Digital Elevation Model**.

Diapositive - A positive film transparency used in the photogrammetric process. This document uses the term analytical diap for a diapositive used for stereo compilation and aerotriangulation and scan diap for one used for scanning to create the digital orthophoto.

File, orthophoto - All digital orthophoto data needed to cover one map sheet. Area covered is a function of map scale.

File, planimetric and parcel - All data needed to cover the area of one 1”=400’ scale map sheet.

Foot, U. S. Survey - There are two values for the foot, the U. S. Survey Foot and the International Foot. All work on this project will use the U. S. Survey Foot. Using this unit of measure, a meter equals 3.28083333333 feet (12 significant figures), and one foot equals .304800609601 meter. The exact relationship between feet and meters is important to the subject work for many reasons, one of which is that the geodetic datum used for airborne and field GPS surveying and Photogrammetry, NAD83, is expressed originally in meters. Conversion to feet is necessary for the Tennessee project and requires double precision computations. The Tennessee State Plane grid used on the maps for this project will display the distance units in U. S. Survey Feet.

GPS - Global Positioning System. Determination of coordinates of points using a network of satellites intended for this purpose.

Metadata - Data about data. A record containing information about a spatial data set or discrete unit of spatial data. The Federal Geographic Data Committee (FGDC) has published Geospatial Metadata Standards that will define the metadata to be collected.

National Map Accuracy Standards (NMAS) - A national standard of accuracy for published maps; published by the U. S. Bureau of the Budget in 1947. A new draft National Standard for Spatial Data Accuracy was published by the Federal Geographic Data Committee in 1996 and draft Geospatial Positioning Accuracy Standards were published by the FGDC in January 1997. A new accuracy standard was approved by FGDC in 1998.

Orthophoto - A scanned and registered aerial photograph that has been corrected for terrain elevation, camera tip and tilt, and other distortions to provide an image with the metric properties of a map. The correct positions of ground features can be measured from this image.

RMSE - Root Mean Square Error, a statistical measure of precision or accuracy of measurements.

Sheet - Map sheets on this project are at 1”=400’, 1”=100’ and 1”=50’. Each sheet has a neat area of 20 by 35 inches when plotted at the design scale. Map sheets are numbered the same as existing parcel maps and cover approximately the same area on the ground. Neatline position is in NAD 83 based on one point of reference for the state.

Tile – The basic organizational unit used for organizing and administering the data sets using Map Librarian. Each tile unit is represented by one 400’ scale map sheet.

9 APPENDIX A

Tennessee Counties

County Name	Code	County Name	Code	County Name	Code		Code
Anderson	01	Fentress	25	Lauderdale	49	Roane	73
Bedford	02	Franklin	26	Lawrence	50	Robertson	74
Benton	03	Gibson	27	Lewis	51	Rutherford	75
Bledsoe	04	Giles	28	Lincoln	52	Scott	76
Blount	05	Grainger	29	Loudon	53	Sequatchie	77
Bradley	06	Greene	30	McMinn	54	Sevier	78
Campbell	07	Grundy	31	McNairy	55	Shelby	79
Cannon	08	Hamblen	32	Macon	56	Smith	80
Carroll	09	Hamilton	33	Madison	57	Stewart	81
Carter	10	Hancock	34	Marion	58	Sullivan	82
Cheatham	11	Hardeman	35	Marshall	59	Sumner	83
Chester	12	Hardin	36	Maury	60	Tipton	84
Claiborne	13	Hawkins	37	Meigs	61	Trousdale	85
Clay	14	Haywood	38	Monroe	62	Unicoi	86
Cocke	15	Henderson	39	Montgomery	63	Union	87
Coffee	16	Henry	40	Moore	64	Van Buren	88
Crockett	17	Hickman	41	Morgan	65	Warren	89
Cumberland	18	Houston	42	Obion	66	Washington	90
Davidson	19	Humphreys	43	Overton	67	Wayne	91
Decatur	20	Jackson	44	Perry	68	Weakley	92
Dekalb	21	Jefferson	45	Pickett	69	White	93
Dickson	22	Johnson	46	Polk	70	Williamson	94
Dyer	23	Knox	47	Putnam	71	Wilson	95
Fayette	24	Lake	48	Rhea	72		

10 APPENDIX B

Revision No. 1

Table below reflects the first revisions to the TNBMP Technical Specifications.

Revision No. 1 Change Table: April 30, 2001:		
Change No.	**Description:**	
1.	Add appropriate annotation specification to the multiple layers required for recreating 50' scale map sheets. The previous version included 50' scale annotation and 100' scale annotation being placed in the same level.	
	Table Impacted:	***(Multiple)***
2.	Define a CODE value for valid parcel regions that do not have an associated GISLINK value such as condominium "common areas".	
	Table Impacted:	***PARCEL.PATPARC***
3.	Eliminate polygon attribution for Street R.O.W.s in the PARCEL layer and add Street R.O.W.s to the PARCEL region subclass.	
	Tables Impacted:	***PARCEL.PAT*** ***PARCEL.PATPARC***
4.	Add GISLINK2 to the PARCEL layer subclass PATPARC for optional use during maintenance.	
	Table Impacted:	***PARCEL.PATPARC***
5.	Remove CODE 999 Outside from the PARCEL layer subclass PATPARC and clarify explaination of areas outside the county.	
	Table Impacted:	***PARCEL.PATPARC***
6.	Change the name of the redefined item MAP_NO to MAP_LTR in the Parcel layer subclass PATPARC to more closely reflect accepted practices.	
	Table Impacted:	***PARCEL.PATPARC***
7.	Define appropriate annotation specifications for INDEX50, INDEX100, and INDEX400 layers,	
	Tables Impacted:	***INDEX50.PAT*** ***INDEX50.TATNAM (added)*** ***INDEX100.PAT*** ***INDEX100.TATNAM (added)*** ***INDEX400.PAT*** ***INDEX400.TATNAM (added)***
8.	Add an item ACQ, LINE_NO, ROLL_NO, and COUNTER_NO to the PHONDX layer to contain the date each frame was acquired.	
	Table Impacted:	***PHONDX.XAT***
9.	Clarify and correct various text references. (Section 6 & 7)	
	Table Impacted:	***none***
10.	Add Feature Code for hidden driveway to STREETS layer.	
	Table Impacted:	***STREETS.AAT***
11.	Replace PLAN layer with EOP layer and RIDGE layer. Add appropriate definitions and notes.	
	Table Impacted:	***PLAN.AAT*** ***EOP.AAT & EOP.PAT*** ***RIDGE.AAT***

Revision No. 2

Table below reflects the second revisions to the TNBMP Technical Specifications.

Revision No. 2 Change Table: April 30, 2003:		
Change No.	**Description:**	
1.	Revision of Introduction to Executive Summary.	
	Table Impacted:	***None***
2.	Remove underscore from TILE_NAME values (i.e. 64023). Modify MAP_NUMBER item to contain 400' map number (i.e. 23) with no leading zeros for maps 1-99. Change description in Annotation layer subclass NAM from Tile Name (400) to 400' Map Number. CODE item will not appear in PAT or AAT.	
	Table Impacted:	***INDEX400.PAT***
3.	Remove underscore in TILE_NAME values (i.e. 64023A). Modify MAP_NUMBER to contain 400' map number and 100' map letter (i.e. 23A) with no leading zeros for maps 1-99. Changedescription of CODE item from in use/not in use to 100' property map is active or not Add item ORTHOCODE to reflect if Orthophoto is present or not. Change description in Annotation layer subclass NAM from Tile Name (100) to 100' map letter. CODE item will appear in the PAT but not in AAT.	
	Table Impacted:	***INDEX100.PAT***
4.	Remove underscore in TILE_NAME values (i.e. 64023AB). Modify MAP_NUMBER to contain 400' map number, 100' map letter and 50' map letter (i.e. 23AB) with no leading zeros for maps 1-99. Change description in Annotation layer subclass NAM from Tile Name (50) to 50' map letter. CODE item will not appear in PAT or AAT.	
	Tables Impacted:	***INDEX50.PAT***
5.	Add DTM Specification to Section 6	
	Table Impacted:	***None***
6.	Remove Ridgelines as a Value and a Description.	
	Table Impacted:	***EOP.AAT***
7.	Change PLAN layer to RIDGE layer in the notes.	
	Table Impacted:	***RIDGE.AAT***
8.	Separate corner text items and group text items into separate in Annotation layer subclass Grpc. Add Blck subclass to PARCELLK Annotation layer with appropriate definitions.	
	Table Impacted:	***PARCELLK.TATGRPC (added)***
9.	Clarify and correct various text references.	
	Table Impacted:	***None***
10.	Added final MrSID compression details to Ortho Specifications.	
	Table Impacted:	***None***

Revision No. 3

Table below reflects the third revision to the TNBMP Technical Specifications.

Revision No. 3 Change Table: April 30, 2004:		
Change No.	**Description:**	
1.	Revise County Index section.	
	Table Impacted:	***None***
2.	Add meaurements for each half of the Land Hooks to note section in PARCELLK coverage.	
	Table Impacted:	***None***
3.	Change feature Item CODE value = 708 to CODE = 707	
	Table Impacted:	***EOP.pat***
4.	Add Repining section.	
	Tables Impacted:	***None***
5.	Add 400-scale Subdivision Point Text Feature that creates a circle around the text, CODE = 693, SubBlock (400)	
	Table Impacted:	***PARCELLK.xat***
6.	Change description for Code 689 from Sub. Block Number/Letter (100) to Sub. Block Circle (100)	
	Table Impacted:	***PARCELLK.xat***
7.	Change description for Code 705 from Sub. Block Number/Letter (50) to Sub. Block Circle (50)	
	Table Impacted:	***PARCELLK.xat***
8.	Add description to note section in PARCELLK coverage that Sub. Block Circle are captured as points, then symbolized as circles.	
	Table Impacted:	***None***
9.	Revise DTM Specification section.	
	Table Impacted:	***None***
10.	Revise Photo Control, Methodology section to specify the size and dimensions of the prepaneled ground control points.	
	Table Impacted:	***None***
11.	Revise Leader Line definition in the Cadastral Feature Definitions.	
	Table Impacted:	***None***
12.	Revise Annotation section.	
	Table Impacted:	***None***

Office for Information Resources
GIS Services

Tennessee Base Mapping Program Value-Added Data Products Technical Specifications

Prepared by
Office for Information Resources and
Comptroller of the Treasury
Revised:
June 30, 2004

Revision Notes:

Revision No. 2 Change Table: June 30, 2004:		
Change No.	**Description:**	
1.	Delete TREE database layer.	
	Table Impacted:	***TREE.pat***
2.	Revise metadata discussion and requirements (page 7).	
	Table Impacted:	***None***

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1 OVERVIEW

Background

During the course of Phase 1 and Phase 2 of the Pilot program for the Statewide GIS Basemapping Program, a valuable lesson learned was that there are additional data products that are required for State, local and Municipal governments that can be acquired most cost effectively in conjunction with production of the base products included in the "Statewide GIS Basemapping Program Technical Specifications." These additional data products are all directly related to the planimetric and topographic data collection activities involved in the production of the Digital Ortho Imagery component(s) of the Technical Specifications.

This document defines the technical specifications for additional data products. All feature definitions and specifications contained in this document are predicated upon the data products required for efficient production being obtained according to the digital ortho imagery specifications contained in "Statewide GIS Basemapping Program Technical Specifications." In other words, an assumption is made throughout this document that the aerial photography, required ground control and photocontrol (IMU or aerotriangulation) have been acquired or are being acquired. This document can be used only as a supplement to the Technical Specifications.

This document makes no effort to provide technical specifications for all planimetric and topographic data sets that fit the criteria of being produced most economically and efficiently. It provides specifications and information for those data layers for which there has been a high interest expressed by various local governments during the course of Phase 1 and Phase 2 of the Pilot. As a result, this document may periodically be updated with specifications for new data layers for which there is interest in obtaining the data products.

Topographic Features

The additional topographic feature data sets involve producing a Digital Terrain Model (DTM) suitable for producing National Map Accuracy Standard (NMAS) contour lines for the 1" to 100' and 1" to 400' aerial photography. It involves collecting additional breaklines and mass point data to supplement the DTMs produced for digital ortho imagery. It will require the delivery of both the DTMs and contour lines described below or the DTMs only.

In addition to the DTMs there are two vector data sets related to topographic features:

2' Interval Contour Lines

Machine generated contour lines shall be provided with an interval of 2-feet. The only classification required for contour lines shall be the distinction of intermediate contours and index contours. Index contours shall occur every 5th contour whose values are evenly divisible by 10 feet. All other contours shall be coded as intermediates. There is no requirement for cartographic labeling of the contour lines.

10' Interval Contour Lines

Machine generated contour lines shall be provided with an interval of 10-feet. The only classification required for contour lines shall be the distinction of intermediate contours and index contours. Index contours shall occur every 5th contour whose values are evenly divisible by 50 feet. All other contours shall be coded as intermediates. There is no requirement for cartographic labeling of the contour lines.

Planimetric Features

All features describe below shall be collected at the same time that stereo compilation of the DTMs is occurring. Each feature shall be provided according to the Database Design specification that follows.

Building Outlines

All visible freestanding structures shall be collected and included as topologically correct polygon features. . The minimum structure that is to be collected from the 1”=400’ source photography shall be 100 feet on a side. The only classification of buildings shall be a distinction between those collected from the 1”=100’ source photography versus those collected from the 1”=400’ photography. The building footprint is acceptable for depicting the building outline. The minimum structure that is to be collected from the 1”=100’ source photography shall be 30 feet on a side

Building Rooftop Elevations

This feature is for a single elevation that shall be associated with the highest point of any building rooftop. Structures that exhibit multiple rooftop heights and that are captured as a single footprint shall have only the highest elevation associated with the structure rooftop. This feature shall only be ordered concurrently with an order for 100-scale building outlines. Building rooftop elevations will not be provided as a separate database layer, but appear in the database design below as an attribute of the Building Outlines layer.

Building Points

Building points shall be captured at the apparent centroid of any building larger than 30' on a side, and smaller than 100' on a side for 400-scale map sheets only. This feature is intended to be a compromise feature enabling the maximum number of structures to be captured from the 400-scale imagery. Therefore, these features shall only be captured and included when accompanied by a corresponding 400-scale map sheet of Building Outlines described above.

Railroad Centerlines

All visible railroad tracks shall be collected as centerlines both from the 1”=100’ source photography and from the 1”=400’ source photography.

2 DATABASE DESIGN

Introduction

This document contains the Arc/Info database design for additional data sets that are produced concurrent with the State of Tennessee parcel level Geographic Information System. The database design presented here is applicable to all additional data sets included.

All vector data shall be delivered in files that cover one 1”=400’ map sheet and have the following characteristics:

Coordinate precision:	Double
Map units:	feet
Coordinate system:	Tennessee State Plane NAD83(90)
FIPS Zone:	4100
Fuzzy tolerance:	0.01
Dangle tolerance:	0.0
Map plotting scales:	1” = 50’, 1” = 100’ and 1” = 400’
Tics:	Placed coincident with tile (map sheet) neatline corners.
Tile Size:	14000 x 8000 feet

The default for numeric values shall be zero (0).

The default for character attributes shall be "UNK".

Map Librarian

Arc/Info Map Librarian shall be used to manage the database. The existing 400’ map sheet index is used for the tiling scheme. The existing county index was created in a manual system and was designed to minimize the number of 400’ map sheets. On the extreme fringe areas of a county, a 400’ map sheet was not created in order to avoid the need for a full 400’ map sheet that contained only a small portion of a county. These areas typically are contained as an inset on an adjoining 400’ map sheet. In the conversion to digital parcel mapping system, these map sheets will be included in the spatial index used in Map Librarian. They are created on an as needed basis and numbered consecutively from the last largest sheet number, regardless of geographic location.

All data is delivered in a 400’ map sheet file unit. The 100’ county index is used for administrative and plotting purposes only.

Tile Naming

Data is to be tiled into areas corresponding to 400’ scale map sheets. These sheets shall have a five-character name. The first two characters represent the county number followed by the three-character map number. For example, map 112 for Maury County would be named 60112.

In Arc/Info, these blocks of data correspond to workspace directories. Each coverage outlined in the database design (e.g. parcel, plan, etc.) shall reside in these workspaces.

Annotation

None of the additional data layers included require the placement of annotation. This includes the Contour Lines for both the 2’ 100-scale and the 10’ 400-scale mapping.

Edge-matching

All Arc/Info sheets must be completely edge-matched, both by coordinates and by attributes. All database features must be both visual and coordinate edge-matched with adjacent sheets. No edge-

matching tolerance will be allowed. Attributes for adjoining features will be identical. Incremental delivery units will edge-match with previously delivered units.

Metadata

Consistent metadata is a critical component for documenting, evaluating, and distributing spatial data of all forms. Metadata conveys information users need to evaluate the fitness for applying a dataset for their needs. In its machine-readable format, it is searched and queried within an intranet or network-based Clearinghouse. Metadata further serves an important role in documenting the lineage and processing history of a dataset as it flows through the data life cycle.

REQUIREMENTS

The State will compile FGDC-compliant metadata for each discrete unit (orthoimage, digital terrain model, and planimetric coverage) on delivery of final digital data products. Detailed supporting data to facilitate this process will be provided by the vendor to the State with the final digital data delivery.

Supporting data for each discrete unit will include the file name, the size of the digital file in bytes, the coordinates of the southeast corner of the dataset in decimal degrees, and the date of the final digital data delivery. For orthoimagery products, additional supporting data for each discrete unit will include the photo acquisition date, the roll number, and the frame number.

3 DATABASE LAYERS

Contour Lines, 2' CI and 10' CI

Coverage Name: ***TOPO***
Feature Class(es): Lines
Description: 2-foot contour lines and 10-foot contour lines

		Item Name	Definition	Value(s)	Description
Line:	**AAT**	CODE	2,4,B,0	401	Intermediate Contour (100-scale)
				402	Index Contour (100-scale)
				421	Intermediate Contour (400-scale)
				422	Index Contour (400-scale)
		ELEV	2,4,B,0	-	Elevation

Building Outlines

Coverage Name: ***STRUCT***
Feature Class(es): Polygons
Description: Building structures

		Item Name	Definition	Value(s)	Description
Poly:	**PAT**	CODE	2,4,B,0	302	Structure (100 scale)
				301	Structure (400' scale)
		ELEV **	2,4,B,0	-	Elevation

** The **ELEV** attribute will only be present in the **STRUCT** layer if Building Rooftop elevations are being captured. Otherwise, the **PAT** for **STRUCT** shall have only one item defined: **CODE**.

Building Points

Coverage Name: ***STRUCTPT***
Feature Class(es): Points
Description: Building points

		Item Name	Definition	Value(s)	Description
Poly:	**PAT**	CODE	2,4,B,0	303	Structure (400 scale)

Railroad Centerline

Coverage Name: ***RAIL***
Feature Class(es): Lines
Description: Railroad centerlines

		Item Name	Definition	Value(s)	Description
Poly:	**AAT**	CODE	2,4,B,0	801	Rail centerline (100 scale)
				802	Rail centerline (400 scale)
				803	Hidden rail centerline

4 APPENDIX A

Revision No. 1 Change Table

The table below reflects the first revision to the TNBMP Value Added Products Technical Specifications.

Revision No. 1 Change Table: March 30, 2002:		
Change No.	**Description:**	
1.	Add description and definition for build points feature (STRUCTPT) – Page 5.	
2.	Add database design for layer STRUCTPT.	
	Table impacted:	***STRUCTPT.PAT***
3.	Add description and definition for building rooftop elevation to layer STRUCT – Page 5.	
4.	Add item ELEV to STRUCT layer to accomadate rooftop elevations.	
	Table impacted:	***STRUCT.PAT***
5.	Add description and definition for building rooftop elevation to layer STRUCT – Page 6.	
6.	Add database design for layer UTIL.	
	Table impacted:	***UTIL.PAT***
7.	Combine TOPO100 layer and TOPO400 layers into single database layer.	
	Tables impacted:	***TOPO100.AAT – DELETED*** ***TOPO400.AAT – DELETED*** ***TOPO.AAT - ADDED***
8.	Add Feature Code for Tree Outline background polygon.	
	Table impacted:	***TREE.PAT***

ATTACHMENT 6.9

Sample Indexes

Tennessee is naturally divided into three very distinct physiographic regions (“grand divisions”). The eastern division is generally characterized as uplands and is often mountainous. The central division is characterized by gently rolling foothills and basin, while the western division is characterized as low plains.

Because the physical terrain is very different in each of these “grand divisions”, included in the ZIP file are six (6) Property Map Indexes (Figure 1). Two counties from each of the grand divisions have been included. The State recognizes terrain differences could result in difference in cost for several components of this project.

Representative high-to-medium and medium-to-low density counties from each division are included to display the distribution of 100’ scale map sheets that will be encountered during the course of this program. These digital index files are included to illustrate the diversity of map sheet layout that exists.

Proposers may request a copy of the Sample Indexes by submitting a written request to the RFP coordinator listed in RFP Section 1.5.1. Proposers are encouraged to use the enclosed digital files in any manner that may assist in preparing their response. Following Figure 1 are the technical specifications associated with the digital files.

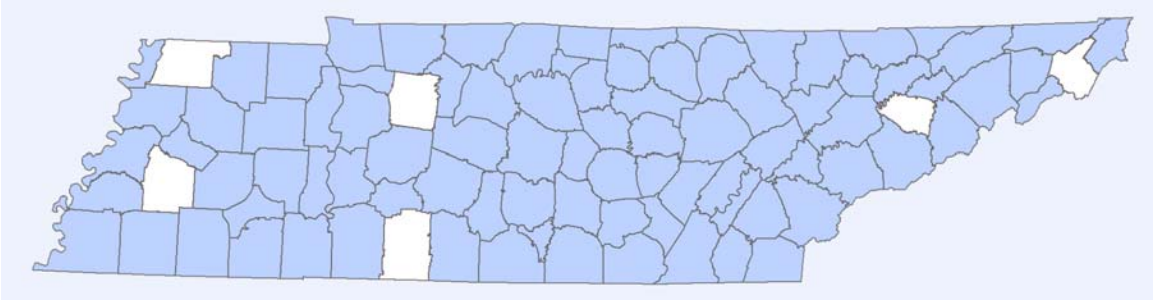

Figure 1

Technical Specifications:
The sample indexes are distributed on DVD-R media. The Archive file described below is located off the root directory of the media.

Archive File: Filename: *Att69_Indexes.*ZIP
Format: WINZIP 9.0

Index Files: Filename(s): <*county*>100.shp, <*county*>400.shp, <*county*>_co.shp
Format: ESRI Shapefile

Where <*county*> is the first two characters of each county name,
<*county*>100.shp contains the 100’ scale index,
<*county*>400.shp contains the 400’ scale index, and
<*county*>_co.shp contains the county boundary.
Coordinates are NAD83 Stateplane feet.

Note: **The index files are used by the State for administrative tracking purposes. These should not be construed as the index files to be used in any production process nor is any accuracy level implied in the county boundary files included. These files accurately portray the sheet layout of each of the counties, and can be used for administrative purposes such as estimating number of sheets, etc.**

ATTACHMENT 6.10

Sample Data Set

The Tennessee Base Mapping Program Technical Specifications and Value-Added Technical Specifications have been developed over a period of six-plus years through the pilot and production phases of the program to date. Every effort has been made to accurately and completely document the structure and content of the spatial data products.

A representative dataset has been developed from a previously created county production effort that meets the Technical Specifications. This dataset covers four (4) 400' scale map sheets. References to the county of origin have been replaced with "Ninety Nine" for the county name and "99" for the county number reference.

The representative dataset includes orthoimagery in GeoTIFF and MrSID formats, digital terrain models in DGN format, and parcels and planimetric data in ESRI coverage format and Librarian structure.

Efforts have been made to include a wide cross section of features from the technical specifications; this representative dataset does not include an instance of every feature or detail contained in the specification. It is also recognized that some features, such as county boundaries, are larger than the extent of the dataset area.

This data set resulted in a Task Order issued to the vendor in the appropriate volumes for the following:

Basic Products:	100' Digital Ortho Images
	400' Digital Ortho Images
	Produce Parcels
Value Added Products:	2' Topographic (DTM Only)
	10' Topographic (DTM Only) **
	Building Footprint – 100' Scale
	Building Footprint – 400' Scale
	Building Points – 400' Scale
	Building Rooftop Elevation – 100' Scale
	Building Rooftop Elevation – 400' Scale

** Note: 10' Topographic (DTM Only) data was ordered for Map Sheets 99075, 99086, and 99087 only. The DTM included in the sample data set for Map Sheet 99074 represent the DTM that is included with the corresponding order for 400' Digital Ortho Image.

Proposers may request a copy of the Sample Data by submitting a written request to the RFP coordinator listed in RFP Section 1.5.1. Proposers are encouraged to use the enclosed digital files in any manner that may assist in preparing their response. Following Figure 2 are the technical specifications associated with the distribution of this representative dataset.

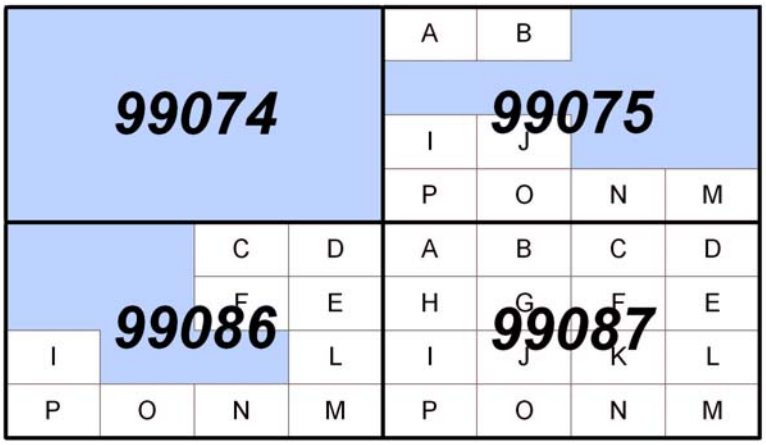

Figure 2

Technical Specifications:
The representative data set is distributed on DVD-R media. The following data structures reference subdirectories from the root directory of the media.

..\arclibs	This subdirectory contains the parcel and planimetric data in ESRI coverage format and ESRI Librarian structure.
..\dtm	This subdirectory contains the digital terrain model files.
..\mrsid	This subdirectory contains the MrSID version of the orthoimagery.
..\orthos	This subdirectory contains the GeoTIFF versions of the orthimagery.

NOTES:
1. The *..\arclibs\ninety-nine\99index* subdirectory contains indexes for the representative dataset.
2. The Librarian data structure includes value-added data for the representative data set.
3. The data in the *..\dtm* subdirectory contains value-added DTM data.
4. In the absence of a full county of data, a mosaic has been generated for the representative dataset and placed in the *..\mrsid* subdirectory.
5. The file PHONDX99.E00 located at the root directory contains the Photography Index as described in the Technical Specifications.